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NEW SERIES, NO. 40

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# Archaeological Investigation of Late Archaic Sites (3000–1800 B.C.) in the Pativilca Valley, Peru

Winifred Creamer, Alvaro Ruiz, and Jonathan Haas

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## Abstract

This volume presents the results of archaeological testing at nine sites in the Pativilca Valley on the coast of Peru. Included are the first systematically collected radiocarbon dates from this valley, part of the Norte Chico region. Descriptions and maps of the sites tested provide the basis for discussion of the Late Archaic period (3000–1800 B.C.) in the valley and within the surrounding Norte Chico region, where monumental architecture appears to have begun earlier than elsewhere along the coast. Forty-four radiocarbon samples were analyzed from eight sites, demonstrating that seven of the eight were occupied between 2740 and 1870 Cal B.C. during the Late Archaic period. One radiocarbon sample dating to 1480 Cal B.C. (ISGS-A-429) from the site of Potao showed that it was occupied in the subsequent Initial period. These findings are discussed in relation to the development of complex society in the region.

Este volumen presenta los resultados del programa de investigación de nueve sitios arqueológicos en el valle del Río Pativilca, en la costa de Perú. Se presentan los primeros fechados provenientes de muestras recogidas sistemáticamente del valle Pativilca en la región denominada el Norte Chico. Los mapas y descripciones forman una base de discutir el periodo Arcaico Tardío (3000–1800 aC) en esta zona, donde se encuentra construcción de arquitectura monumental durante una época anterior del resto del Nuevo Mundo. Cuarenta y cuatro muestras de ocho sitios estaban fechados. Siete de los ocho sitios fecharon entre 2740 y 1870 Cal aC, en el periodo Arcaico Tardío. Un fechado de 1480 Cal aC (ISGS-A-429) del sitio Potao indica que este sitio estaba ocupado más tardío, durante el Periodo Inicial. Estos resultados pueden estar discutidos en relación al desarrollo de la sociedad compleja en el Norte Chico.

## Introduction

Andean Peru has long been identified as one of the six major world areas where “civilization” developed under largely endogenous or “pristine” conditions (Fried, 1967). The last quarter of the 20th century saw a great deal of research and writing focused on questions of how and why civilization first developed in the Andes (Moseley, 1975, 1992; Haas, 1982; Haas et al., 1987; S. Pozorski & T. Pozorski, 1987; Grieder et al., 1988; Wilson, 1988; T. Pozorski & S. Pozorski, 1990; Shady, 1993, 1995; Billman, 1999, 2001; Stanish, 2001). Continuing research

has steadily pushed back the very beginnings of the origins of what can be identified as emergent Andean civilization.

For many years, the Chavín cultural complex, with its distinctive art style and its ceremonial capital at Chavín de Huantar in the central highlands, was considered the “Mother Culture” of Andean civilization (see Lumbreras, 1970, 1971, 1972, 1981, 1989; Kembel & Rick, 2004). More recent research, however, has shifted the focus of attention away from the highland-based culture of Chavín and moved it to a stretch of the central Peruvian coast. In this area, located roughly between the Lurín Valley on the south



and the Casma Valley on the north, archaeological research is revealing a pattern of large ceremonial centers with monumental architecture and elaborate art (Feldman, 1983, 1987, 1992; Quilter, 1985, 1991; Burger, 1987; Burger & Salazar-Burger, 1991; Quilter et al., 1991; S. Pozorski & T. Pozorski, 1992; T. Pozorski & S. Pozorski, 2000; Haas & Creamer, 2004). Dating of the sites during these early coastal developments is still being worked out, but radiocarbon dates range from 4900 BP to 3200 BP, well before the founding of Chavín de Huantar and the Chavín expansion in the Early Horizon.

The remarkable assemblage of major Late Archaic centers in the Norte Chico region, all with monumental and ceremonial architecture, presents an unparalleled opportunity for archaeological research. The area offers the possibility of opening a window into the prehistoric beginnings of the earliest complex society to emerge in South America. This volume presents the first systematically collected radiocarbon dates from one part of the coastal zone, from nine Late Archaic sites in the Pativilca Valley. The Pativilca Valley is one of the four adjacent coastal valleys where this pattern of early monument construction took place. In addition, a detailed description of each of the sites sampled is provided, including the test units excavated and the looter's holes that were cleared and sampled. We include descriptions of the sites tested, the samples collected and the context of each, and the resulting radiocarbon dates. These are basic data on a series of distinctive sites and provide the basis for discussion of the Late Archaic period (3000–1800 B.C.) in the valley and within the surrounding Norte Chico region, where monumental architecture appears to have begun earlier than elsewhere along the coast. This is followed by a discussion of the implications of our findings in relation to the development of complex society in the region.

The Norte Chico region includes the valleys (S to N) of Huaura, Supe, Pativilca, and Fortaleza, part of the central Peruvian coast (Fig. 1). This is an area that has received intermittent attention from archaeologists. Informal and limited surveys in the area (Williams & Merino, 1979; Vega-Centeno et al., 1998) have shown that settlement in the area was both long and dense. The Norte Chico is at a biological, geographical and cultural crossroads between the north and south coastal regions (Billman, 2001; Dillon et al.,

2003). Culturally, at least in late prehistoric times, the Norte Chico was a frontier zone between the northern sphere of the Chimu and the southern sphere of Chancay. Although there has been some research in the region over the past 100 years, the archaeological record of the Norte Chico is comparatively unknown.

Biologically, the southernmost occurrence of equatorial biotic communities extends into this area, as do the northernmost examples of drier desert communities. Billman (2001) has suggested that two environmental characteristics may have influenced the development of social complexity in the Norte Chico. The coastal plain between the Andes and the Pacific Ocean is widest in the Tumbes region in the far north of Peru and narrows toward the south. The Andes approach the shore by the Moquegua Valley near the Chilean border where there is almost no coastal plain at all. The Norte Chico is midway between the large valleys of the north and the smaller valleys of the south. Surplus agricultural production might therefore be presumed to be proportional to the area of coastal plain present, decreasing from north to south along the coast. However, El Niño/ENSO events appear to impact the coast differently from north to south in a way that impinges on agricultural productivity. The severity of rains and flooding from these events decreases from north to south; thus, the Norte Chico has felt less impact from El Niño/ENSO events than do the valleys of the north coast. The position of the region midway in the gradient of coastal plain area and midway in the scale of El Niño/ENSO effects may suggest factors that contributed to the particular series of cultural developments that occurred in this region during the third millennium B.C. (Billman, 2001).

Physical proximity and topographic features integrate the four-valley system of the Norte Chico from within. The three northern valleys, Fortaleza, Pativilca, and Supe, all empty into the Pacific over a stretch of only 22 km. There are, in turn, inland passes linking the upper reaches of all the valleys. In addition, the middle reaches of Huaura are separated from Supe by only 15 km through either of two inland passes. The Norte Chico spans a total of only 50 km of coastline. A recent analysis of least-cost pathways from inland sites to the coast suggests that the river valleys were not the best routes to the coast but that travel directly across the hills from sites to





FIG. 1. Map of the Norte Chico region highlighting the Late Archaic sites in the Pativilca Valley.

the coast was likely to have been used (Carlson & Craig, 2006).

Previous Research in the Norte Chico

Max Uhle (1925) was the first professional archaeologist to record sites and conduct excavations in the Norte Chico region. Uhle was specifically after ceramic vessels that could be

used to help develop a broad ceramic chronology for the Peruvian coast. He excavated at sites around the mouth of the Supe Valley, including Chimu Capac (Middle Horizon), San Nicolas (Middle Horizon, Late Intermediate, and Late Horizon), around Aspero (Initial period/Early Horizon), and others (see also Kroeber, 1925). Subsequent to Uhle, Kosok and Schaedel (Kosok, 1965) visited the region in the 1940s



and used aerial photographs to locate and record a number of sites in all four valleys. Kosok made some grab sample collections while in the area, but other than a few drawings and photographs, none of this material has been published. Kosok also published the first accounts of a complex of sites that were seen at the time as enigmatic because they lacked surface ceramics. At the largest of these sites, Chupa Cigarro Grande (now known as Caral), Kosok noted, “The *virtual absence of potsherds at this site* made any accurate calculations as to its relative age impossible” (1965, p. 223, italics in original).

In the 1940s, Willey and Corbett (1954) conducted the first scientific excavations in the region at several sites on the coast at the mouth of the Supe Valley. One of these is the large community of Aspero, where excavations were undertaken in a Late Archaic midden and a later, ceramic-bearing cemetery. At the time, the site was recognized as an early maritime settlement, but absolute dates were not available. Willey revisited Aspero in the 1970s with Moseley (Moseley & Willey, 1973; Moseley, 1975), when they recognized that a series of mounds at the site (identified as “hillocks” in Willey and Corbett’s earlier publication) were in fact constructed platform mounds. It was also recognized that the paucity of ceramics at the site was due to the fact the site dated to a preceramic period. Further work was conducted at Aspero in the 1970s by Feldman (1980, 1983, 1987, 1992), who obtained radiocarbon dates ranging from  $4900 \pm 160$  BP to  $3950 \pm 150$  BP. The earliest of these dates was rejected at the time as too old, and the earliest occupation of Aspero still needs to be defined. Feldman tested a second Late Archaic site in the area, As8, which yielded a single radiocarbon date of  $6914 \pm 190$  BP. Salvage excavations at the small maritime/coastal community of Bandurria at the mouth of the Huaura Valley have provided radiocarbon dates ranging from  $4530 \pm 80$  BP to  $4300 \pm 90$  BP (Fung, 1988, 2004). Additional work was done in the 1970s at other Late Archaic sites in the Norte Chico (Fung, 1988) but no dates have been reported. Silva (1975, 1978) excavated at the site of Bermejo to the north of the Fortaleza Valley, which yielded Initial period and Early Horizon dates. However, large parts of Bermejo lack ceramics and have architecture similar to Late Archaic sites in the valleys immediately to the south. Shady and Ruiz (1979) tested a Middle Horizon site in the Huaura Valley in 1978.

A survey of large sites with standing architecture in the Supe, Pativilca, and Fortaleza valleys was undertaken by Williams, though only the Supe Valley results have been reported (Williams & Merino, 1979). Williams visited nearly 100 sites in the Supe Valley and a similar number were apparently visited in Fortaleza and Pativilca (Moseley, 2001). These sites run the temporal spectrum from Late Archaic through Late Horizon Incan sites. In the mid-1990s, Shady (Shady et al., 2003) visited sites recorded by Williams and Merino in an effort to distinguish Late Archaic occupations from later Initial period and Early Horizon occupations. Systematic survey of the valley bottom was conducted in the lower portion of the Fortaleza Valley in conjunction with a power line construction project (Vega-Centeno et al., 1998). More than 100 sites were recorded in the course of this survey. Engel (1987) surveyed sites in the Pativilca Valley in the 1980s, but they have not been fully reported. A comprehensive survey of the Huaura Valley in 2004–2005 recorded over 500 separate sites and over 2,000 different site localities. Single sites with multiple occupations were recorded separately as individual localities (Nelson & Ruiz, 2005).

Zechenter (1988) tested a number of sites in the Supe Valley in the 1980s in an effort to reconstruct subsistence strategies during the Late Archaic and Initial periods. In addition to extensive biological data, she reports individual radiocarbon dates from nine sites yielding dates from  $7330 \pm 110$  BP to  $3110 \pm 80$  RCYBP (approx. 6190–1370 Cal B.C.). Also in the Supe Valley, Shady initiated extensive excavations at the site of Caral (formerly Chupacigarro Grande) in the middle reaches of the Supe Valley in the mid-1990s (Shady, 1997, 2003a,b,c,d,e, 2004; Shady & Leyva, 2003). This work has focused on the description of architectural features of the site and retrieving ethnobotanical and ethnozoological specimens for analysis. Shady’s research provides the first detailed account of a major inland Late Archaic urban center in the Andes. Recent publication of radiocarbon dates from Caral range from  $4090 \pm 90$  BP to  $3640 \pm 50$  BP (Shady et al., 2001).

### **The Development of Complex Society**

Moseley (1975) was one of the first to recognize the “precocious” nature of cultural development on the Peruvian coast. He pointed out that there were a number of large maritime-



based sites up and down the coast that dated to the third millennium or even before. He also was one of the first to highlight the fact that a number of these sites, such as Aspero in the Supe Valley and El Paraiso in the Chillon Valley, had large communal architecture yet lacked ceramics in their cultural assemblages. This lack of ceramics would indicate that the sites antedated the introduction of ceramics in Peru at around 1800 B.C. Subsequently as radiocarbon dates began to be obtained for these Late Archaic sites they were confirmed to extend back into the third millennium B.C. Engel (1957) coined the term “Cotton Preceramic Stage” to delineate coastal sites such as these that had cotton but lacked ceramics and were occupied between about 3000 and 1800 B.C. That term is applied here as a general marker to place these sites in a wider comparative context in the Peruvian Andes. Moseley (1975, 1985, 1992, in press) then went on to argue that it was the organization required for maritime-dependent subsistence that was conducive to the emergence of political centralization. Centralization, in turn, “preadapted” these cultural groups to the subsequent development of even more complex, hierarchical and centralized forms of organization based on irrigation agriculture.

Moseley’s “maritime foundations of Andean civilization” theory has been refined and debated now for the past 30 years (see Osborn, 1977; Raymond, 1981; Wilson, 1981; Bonavia, 1982, 1991, 1993–1995; Quilter & Stocker, 1983; S. Pozorski & T. Pozorski, 1990; Quilter, 1992). It remains today a powerful explanation for how and why the Andean region started on the road that eventually led to much more complex states and empires. More recent research on the coast, including that presented here, is raising questions about whether coastal maritime sites did indeed develop independently of an agriculturally based subsistence economy. Research in the Supe Valley by Shady and her colleagues (Shady, 1997, 1999a, 2000a,b,c; Shady et al., 2001; see also Williams & Merino, 1979; Engel, 1987) has shown that the maritime community of Aspero in the Supe Valley was not alone; rather, it appears to have been an integral part of a much larger cultural system that included large agriculturally based centers.

#### **Field Methods: Proyecto Arqueologico Norte Chico**

Among the four valleys, the Pativilca Valley was selected as the 2002 research area for the

Proyecto Arqueologico Norte Chico (PANC). The Pativilca River rises in the Andes and flows through a long and narrow valley until it reaches the coastal plain where it becomes wider, generating cultivable land. The lower reaches of the valley extend from the coast at the mouth of the river to the Quebrada Huanchay, where the valley narrows, eliminating most cultivable land. The lower valley is the zone of river floodplains and the lowest foothills of the mountains. One important characteristic of this river is that it maintains a flow of water all year long, while the Fortaleza and Supe rivers carry water during only some months of the year (Table 1), making the Pativilca the hydrological center of this area (Kosok, 1965, p. 218). Reconnaissance of the valley by PANC members identified probable Late Archaic occupations at eight sites with large mounds—Upaca (formerly La Capitana), Punta y Suela, Pampa San José, Carretería, Huayto, Potao, Los Olmitos, and Vinto Alto—and two cemeteries, CR and CP. These two sites are only minimally identified here to avoid drawing attention to specific localities. Most of these sites were mentioned by Engel (1987) and tentatively identified as belonging to either the Cotton Preceramic or the Initial period, though he does not appear to have excavated at any of them.

Before undertaking reconnaissance in the field, we systematically scrutinized aerial photos of the zone taken by the Servicio Aerofotográfico Nacional (SAN). Architectural remains of archaeological sites such as mounds, platforms, sunken plazas, walls, and looted areas could be identified in areas not covered by agricultural fields, roads, or structures. Subsequently, investigators visited the places identified as sites in the aerial photos, sites identified by previous researchers and by people living in the area. The location of each identified site was initially recorded with a handheld Global Positioning System (GPS), and the information was transferred to maps at a 1:100,000 scale, obtained from the Instituto Geográfico Militar.

Boundaries for each site were established using several criteria, including the area over which tiny shell fragments could be observed on the surface, and the surrounding natural features, such as the walls of a quebrada. All of the Pativilca Valley sites mentioned here have been recorded as polygons registered with the Instituto Nacional de Cultura, Lima. This designation is the first step toward providing legal



TABLE 1. Rivers and valleys of the Norte Chico

River	Year	Max volume* avg daily discharge (m <sup>3</sup> /sec)	Month	Min volume* avg daily discharge (m <sup>3</sup> /sec)	Month	Irrigated area** (h)
Fortaleza	2002–2003	17.5	Mar	1.7	Sep, Oct	2808
	2003–2004	9.2	Apr	1.1	Jul	
	2004	1.1	Aug, Nov	1	Sep, Oct	
Pativilca	2002–2003	88.4	Mar	13.7	Sep	27100
	2003–2004	59.1	Feb	10.7	Jul	
	2004	35.3	Nov	9.9	Aug	
Supe	2002–2003	20.2	Mar	1.7	Jul	5162
	2003–2004	8.7	Apr	1.3	Jun, Jul	
	2004	2.5	Nov	1.1	Sep, Oct	
Huaura	2002–2003	59.4	Mar	13.6	Sep	38497
	2003–2004	78.5	Feb	12	July	
	2004	14.3	Oct	10.7	Aug, Sep	

\* 2002–2003: [http://www.minag.gob.pe/hidro\\_cau\\_lima2.shtml](http://www.minag.gob.pe/hidro_cau_lima2.shtml) (PROM); 2003–2004: [http://www.minag.gob.pe/hidro/hidro\\_cau\\_lima2004.shtml](http://www.minag.gob.pe/hidro/hidro_cau_lima2004.shtml); 2004: [http://www.minag.gob.pe/hidro/hidro\\_cau\\_lima.shtml](http://www.minag.gob.pe/hidro/hidro_cau_lima.shtml) (PROM). Data available for Aug.–Nov. 2004 only.

\*\* [http://www.inrena.gob.pe/irh/irh\\_infinteres\\_atdr\\_barranca.htm](http://www.inrena.gob.pe/irh/irh_infinteres_atdr_barranca.htm) (2001) or [http://www.inrena.gob.pe/irh/irh\\_infinteres\\_atdr\\_huaura.htm](http://www.inrena.gob.pe/irh/irh_infinteres_atdr_huaura.htm) (2005).

protection for each site. Each site was numbered with the year the work was carried out (e.g., 02), the valley (e.g., PV = Pativilca Valley), type of survey (e.g., GS = General Survey), and a number distinguishing each site. Names were established for each site based primarily on local usage.

The inventory of archaeological sites recorded during the project included nine elements: site name, latitude and longitude, altitude, location, history, ceramics, period, state of conservation, and description:

1. Name: Names were assigned to a number of the sites by Engel (1987). When no name was attached to the site, we assigned the name used by local people to refer to the site or a geographical name from maps of the Instituto Geográfico Militar of Peru.
2. Latitude and Longitude: These were determined by use of GPS or maps at the 1:100,000 scale by the Instituto Geográfico Militar of Peru.
3. UTM Coordinates: These were established with a handheld GPS unit and/or maps at the 1:100,000 scale of the Instituto Geográfico Militar of Peru.
4. Altitude: Determined by GPS unit or from topographic maps.
5. Location: This includes the location in relation to settlements and towns nearby, geographic features, and political units of district and province.

6. Description: Site descriptions were prepared to include architectural components, their form and size, along with archaeological materials encountered on the surface.
7. History: Previous investigations, if any, at the sites visited.
8. Period: This includes the chronological position of the site, determined by analysis of the cultural material on the surface, architectural features, and exposed profiles at each site.
9. State of Preservation: This is a preliminary assessment of the conditions of deterioration of the site and the level of destruction by human or natural forces.

To assess the actual chronology of the occupation in the Pativilca Valley, sampling and test excavations were implemented in 2002 at nine of the 10 potential Late Archaic sites. Los Olmitos, though included on the map, was not discovered until the middle of the 2002 field season, and it could not be included in the permit for that year. With the exception of the two cemeteries and test pits at Upaca and Punta y Suela, excavation focused primarily on retrieving radiocarbon dates from within the monumental architecture (Table 2). At each site, areas of previous disturbance were targeted for clearing. These holes were either excavated by looters or created by various modern construction activities, such as bulldozing a road or mining a site for gravel. The holes and profiles exposed were used as



TABLE 2. Characteristics of Norte Chico sites tested in 2002.

Site no.	Name	Location	Dist. from coast (km)	Elevation (m asl)	Area of Architec- ture (h)	Mounds (no. still visible)	Circular plazas (no. still visible)	Range of dates (cal B.C.)	Dated C14 Samples*
02-PVGS-1	Upaca	Eriazo, base of Cerro Mirador	8	209	35	3	2(2)	2740–210	12
02-PVGS-2	Punta y Suela	River terrace	6	152	11	8	2(0)	9170–560	11
02-PVGS-3	Pampa San José	Eriazo, base of Cerro Mirador	12.5	235	5	8(3)	1(1)	2230–1870	6
02-PVGS-4	Carretería	Eriazo, base of Cerro Lomas	12.5	265	1	1	1(0)	2180	1
02-PVGS-5	Huayto	de Pativilca	17	333	5	6(3)	0	2270–2240	2
02-PVGS-6	CR	Hilltop	5	160	NM	0	0	n.a.**	0
02-PVGS-7	CP	Eriazo	5	152	NM	0	0	2220	1
02-PVGS-8	Potao	Valley floor	5.5	161	10	5(3)	0	1480	1
02-PVGS-9	Vinto Alto	Valley margin	13	250	18	3	1(0)	2580–2100	9
02-PVGS-10	Los Olmitos	Valley margin	14	280	12	1	0	n.a.	0

\* Details in Haas et al. (2004)

\*\* n.a. = no samples have been processed from this site.

NM = Not measured.

“windows” into the interiors of platform mounds. Making use of existing damage allowed us to extract radiocarbon samples from interior surfaces and early construction phases in the mounds that we could not reach with test pits during a single field season.

All but two of the mounds tested in the Pativilca Valley were constructed at least in part with shicra (Table 3), woven bags that were filled with stone and used in mound construction, somewhat like a sandbag (Quilter, 1985). The arid climate has preserved these bags (Fig. 2) and provides an excellent source of annual plant remains that are suitable for radiocarbon dating (Shady et al., 2001). In each of the disturbed areas selected for sampling, all loose surface fill was removed to expose undisturbed, *in situ* construction. Excavation beneath the disturbed surface materials was sufficient in every case to ensure that undisturbed construction was exposed for sampling. The exposed surfaces were then photographed and drawn. In addition to the remains of shicra, plastered floors provided a good source of organic material for radiocarbon dating, as they were constructed with large amounts of fiber used as tempering material mixed with clay. In a small number of cases, mentioned below in the site descriptions, it was not possible to obtain *in situ* annual plant fibers from the constructions. In these cases, pieces of charcoal from burned wood were extracted from construction fill. Such charcoal, recovered in a dry environment such as the Peruvian coast, introduces potential problems of “old wood” (Schiffer, 1986).

In arid environments, wood may survive for 100 years or more after it is cut since decomposition is slowed by the inhospitable climate for bacteria growth. Many years after a tree dies, surviving branches may be incorporated into construction or used for firewood. When the charcoal produced in a hearth, for example, survives and is used as a sample for radiocarbon dating, the date it yields can be highly inaccurate because the age of the wood is not a reflection of the age of the structure or feature of which it was a part. For this reason, fibers of annual plants are the preferred material for radiocarbon dating in dry regions since these materials live for only a single season and do not yield the inaccurate results that dry wood may provide. Despite the potential problems of using wood charcoal for radiocarbon dating, it was judged worthwhile to date charcoal when annual plant fiber was not available. The resulting dates could be compared

TABLE 3. Architecture at Pativilca Valley sites

	Size (m)	Height (m)	Volume (m <sup>3</sup> )	Phases (from testing)	Construction material	Dates (cal B.C.)
Upaca						
A	55 × 89	12	26,673.34	1	Angular rock w/a few cobbles, shicra	2330–2190
A	Destroyed	4		4	Angular rock w/a few cobbles, shicra	2740–2310
Associated CP				n.a.*		
B	15 × 20	6	n.a.	4		1110, 870
C	10 × 20	5	n.a.	n.a.		None
Associated CP	20			n.a.		
D-Test Unit 1	60 × 60	0		3	Area of pits dug into surface	210
D-Test Unit 3	60 × 60	0		2	Area of pits dug into surface	None
E-Test Unit 2	n.a.	0		2	Hill slope	1160
Punta y Suela						
A	40 × 50	12	15,897.86	n.a.		None
Associated CP	Destroyed			n.a.		None
B1	24 × 26	4	335.76	n.a.		2420–2200
B2				n.a.		None
B3				n.a.		None
Associated CP	15			n.a.		
C	37 × 74	6	378.75	2	Cobble and angular rock	1480
DN-1	Domestic trash			3		9750–2430
DN-2	Domestic activity			3		1840–750
DS-1	Domestic trash			5		7410–6440
Pampa San José						
A	73 × 101	20	52,042.89	15	Cobble, angular rock, shicra, dirt-filled shicra	2230–1870
Associated CP	39.6			n.a.		None
B	38 × 42	7	3,197.51	n.a.		None
C	35 × 40		2,868.04	n.a.		None
D			4,097.71	n.a.		
Carretería						
A	32 × 60	7	25,373.59	5	Angular granite, shicra	2180
Huayto						
A	68 × 75	7	14,361.68	n.a.	Cobbles	None
B	55 × 127	3–9	15,315.52	n.a.	Cobbles	None
C	50 × 95	8	18,803.15	3	Cobbles, shicra	2270–2240
D	55 × 65	1	n.a.	n.a.	Cobbles	None
E	No mounds			n.a.		None
F	Destroyed			n.a.		None
G	Destroyed			n.a.		None



TABLE 3. Continued.

	Size (m)	Height (m)	Volume (m <sup>3</sup> )	Phases (from testing)	Construction material	Dates (cal B.C.)
H	No mounds			n.a.		None
I	Destroyed			n.a.		None
Potao						
A	69 × 73	17	n.a.	1	Cobbles	1480
B	32 × 85	7(3)	n.a.	n.a.	Cobbles	None
C	91 × 159	7	n.a.	n.a.	Cobbles	None
D	27 × 38	1.5	n.a.	n.a.	Cobbles	None
E	Destroyed			n.a.		None
Vinto Alto						
A	74 × 85	23	107,800.3	1	Angular rock, shicra	2540–2480
B	58 × 91	18	79,379.28**	n.a.		None
C	86 × 106	35	1,011.51	4	Angular rock, shicra	2580–2100
D	25–35 × 65		n.a.	n.a.		None

\* n.a. = no samples have been processed from this site.

\*\* Vinto Alto: Mound B includes both Mounds A and B.

with those obtained from annual plants as a check on their consistency.

In addition to sampling in mounds, 1 × 2-m test pits were excavated at Upaca and Punta y Suela. Both of the cemeteries, CP and CR, have been subjected to looting. We did not attempt to excavate any undisturbed burials this first field season but cleared 5 × 5-m areas in order to obtain a sample of human bone and associated funerary objects from the heavily looted surface.

Test excavations employed two strategies depending on the context and the condition of the area that was being tested. Test pits of 1 × 2 m were undertaken at sites in the Pativilca Valley identified as Late Archaic or aceramic centers. These test pits were located in areas where there appeared to be deposits of stratified trash. Such deposits were identified by examination of erosion channels, looter's pits, or other disturbed areas and through the use of a tool to obtain samples (sediment tester). For each test pit, the contents were excavated in a combination of natural layers and artificial levels, depending on the context. When natural layers were distinct, they were used as the principal horizontal control within the test unit. However, when natural layers could not be detected or the natural layers were more than 15 cm thick, the deposits were divided into artificial levels of 15 cm to maintain adequate control over provenience. All the excavated material was screened through quarter-inch mesh, and 10% of the sample from each unit was screened through one-eighth-inch mesh. This was accomplished by directing every tenth bucket of material to a separate screen. Two-liter soil samples were taken for fine screening and flotation, and additional soil was taken for pollen analyses.

Linda Scott Cummings, director of the Paleo-research Institute, worked directly with the team in the field to develop strategies for taking the flotation, fine-screen, and pollen samples. Samples for fine screening and flotation were measured from material that had already passed through quarter-inch screen. Materials collected were placed in bags labeled with the date, provenience, excavators, and contents. Special care was made to recover radiocarbon samples with secure provenience. Samples for radiocarbon dating were placed into aluminum foil in the field and then into labeled bags. Each bag was recorded in a field catalog. A written description of each site was accompanied by sketch maps



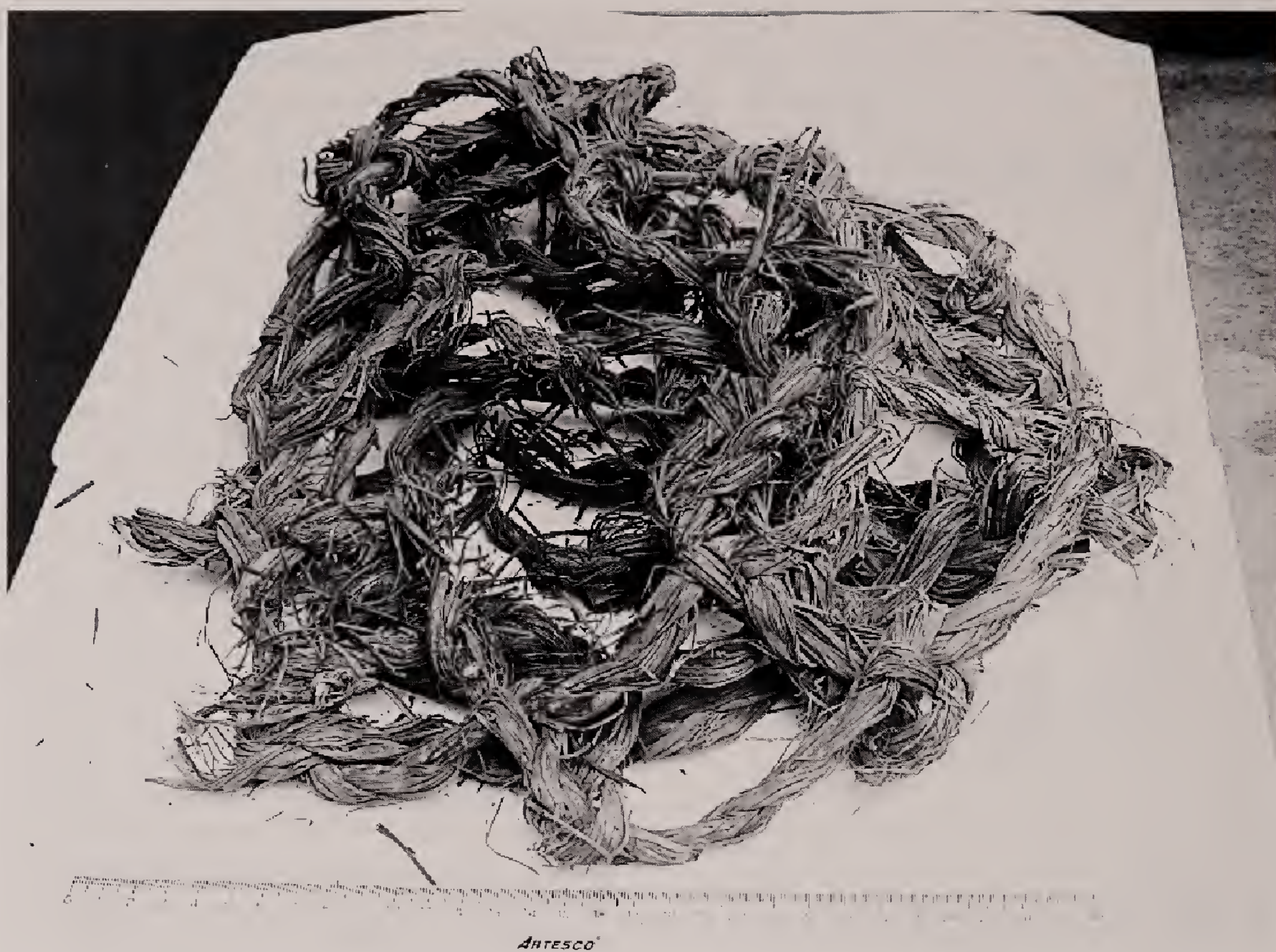


FIG. 2. Excavated shicra bag illustrating simple twined construction (J. Haas).

and the field notes of the investigators. The primary focus of the 1 × 2-m test excavations was to recover samples of tools and floral and faunal remains in areas of stratified trash and to obtain radiocarbon samples from residential contexts. There was no attempt during these limited excavations to identify and uncover specific architectural features of individual structures or to excavate burials.

## Analysis of Materials

The main objective of the research in 2002 was to obtain radiometric dates for sites that were believed to date to the Late Archaic period (3000–1800 B.C.) based on layout, architectural features, and the absence of ceramics. This report focuses on sampling methods, detailed context for each dated sample, and discussion of the dates obtained. Analysis of botanical and faunal remains, pollen, textiles, lithics, and other materials will be presented elsewhere.

All materials from the 2002 field season have been processed (brushed or washed), labeled, and inventoried. Both screen and flotation samples of macrobotanical remains were analyzed. Plant stems, leaves, fruits, and seeds were identified on the basis of comparison with reference materials (Alarcon, 2005). Two-liter samples were collected for each process, though only one liter was processed. Fine-screened materials were passed through 4-mm and 2-mm geological screens. The materials collected were then sorted into seeds, fish bone, and other identifiable groups, such as otoliths (see also <http://www.paleoresearch.com/manuals/manual.html>). Animal bone was identified in macro-, fine-screen, and flotation samples. Ceramics were collected from the surface of sites during the 2002 field season. These appear to be surface-only deposits that postdate the occupation of mounds at the sites tested (Bria, 2004). Lithics were identified on the basis of comparison with materials from other Middle and Late Archaic sites (Dillehay et al., 1997; Rossen, 1998; Dunn & Heaton, 2005). Twined, looped, knotted, and other nonloom textiles were



identified by comparison with examples from Huaca Prieta (Bird & Hyslop, 1985) and Asia (Engel, 1963) and examples at the Museo Nacional de Antropología y Arqueología and the Huaca Prieta collection at the American Museum of Natural History (L. Haas, 2004, 2005). Analysis is pending for the loom-woven textiles collected from the two heavily looted cemetery sites.

Pollen samples were collected from each level of excavated test pits. Twenty-three samples have been processed at the Texas A&M pollen laboratory. One hundred grain identifications have been made from each sample. Procedures for analysis of pollen samples in Peru are being tested at a new facility at Cayetano Heredia University (Huaman et al., 2005). Collecting plants, processing samples to create a reference collection of pollen, and identifying pollen from archaeological samples is ongoing.

Each of the sites sampled in 2002 has been identified in historic air photos (1943 and 1969–1970). Initially, sites were recorded with a series of points recorded on handheld GPS units. Subsequently, the geographical position of each site, structures, and features mentioned have been recorded with high-resolution GPS receivers (Trimble Pro-XR) corrected by post-processing with a GPS base station located in the town of Barranca. All the Pativilca sites tested have been intensively mapped with a Topcon total station. Although the number of points collected varies for each site, a minimum of 10,000 points per site was collected. Contour maps and cross sections were produced with Surfer (ver. 8) and ARCGIS (ver. 9.1). A Geographic Information System is being developed for the research area that facilitates analysis of site location and layout (Chun, 2003), architecture (Advincula, 2005; Perales & Haas, 2005; Ruiz et al., 2005), and the application of analytical techniques, such as viewshed analysis and analysis of least-cost pathways (Carlson & Craig, 2005).

The materials recovered from surface collection, test pits, and cleared profiles are temporarily stored at the field center of the Proyecto Arqueológico Norte Chico during ongoing analysis. The present work focuses on the identification and dating of sites in the Pativilca Valley, while analysis of botanical, lithic, and other materials will be published separately. Materials that have been analyzed are stored in

an air-conditioned, secure storage facility in the town of Pativilca, Peru. We have begun coordinating with the Instituto Nacional de Cultura to determine the long-term storage appropriate for project materials after analysis is complete.

## **Fieldwork, 2002**

Each of the nine sites tested during 2002 was believed to date to the Late Archaic period. While the results of radiocarbon dating suggest that portions of one or more may date to the Initial period rather than the Late Archaic, the results are impressive. Since none of these sites has received systematic study in the past, the sites that we rely on for much of our discussion of the development of social complexity are described thoroughly.

### **Upaca (02PVGS-1)**

Upaca is located along the right margin of the Pativilca River, Barranca province, in the district of Pativilca, at the foot of the eastern slope of the Pativilca Hills (sheet 22h National map series). The site is located within a broad, open dry wash, or *quebrada*, surrounded by hills on three sides and the valley floor on the fourth.

Upaca is a large site, measuring approximately 120 hectares. It includes a series of mounds, circular plazas, residential areas, two large compounds with what appear to be storage rooms, and a cemetery. There is a central large mound complex located in what is designated Sector A in the northeast corner of the site. This complex includes the largest platform mound at the site, which measures  $89 \times 55 \times 12$  m tall. The mound was constructed primarily of quarried angular stones, though there are some river cobbles incorporated into the fill. In contrast, mounds at other sites, such as Huayto and Potao, are constructed entirely of rounded river cobbles. At the top of the main mound, brick and cement rubble indicate the location of abandoned 20th-century construction. It is not clear whether these structures were ever completed or occupied, but the pathway created to provide access to the summit of the mound by heavy equipment left a notable scar.

A sunken circular plaza is associated with the main mound. This circular plaza was placed inside a low rectangular platform extending out from the base of the main mound toward



the north. Toward the east and south side of the main mound are remnants of four smaller platforms that have been seriously affected by present-day occupation. To the west and south of Sector A are several smaller mound complexes and a second sunken circular plaza (Fig. 3).

A unique aspect of Upaca is the presence of two rectangular enclosures surrounded by low, wide stone walls. Located 300 m due west of the main mound in Sector D, the western quarter of each compound is filled with a large number of symmetrical room depressions arranged in rectangular rows and columns (Fig. 4). The uniformity and arrangement of these rooms is reminiscent of large blocks of storerooms found at much later, Late Intermediate or Late Horizon sites in Peru. There is, however, a complete absence of any surface ceramics in the area of these rooms, and it appeared possible that these dated to the Late Archaic occupation of Upaca. The walls today are no more than 50 cm high but up to 2 m wide. One compound measures  $60 \times 60$  m, while the other, larger compound is  $128 \times 130$  m. Remnants of a stone-walled road or pathway skirt the southern and western periphery of the site and have been followed to the west at least 3 km. The dating of this road was impossible to ascertain from surface observation alone.

Upaca has been subjected to considerable disturbance and destruction in the past 50 years. The eastern margin has been turned into cultivated fields and modern housing. The ETECEN power station (Estacion Central Eléctrica del Norte, now called Red Peru) was placed in the middle of the site (see Cordova Herrera, 2001). Aerial photos of the site before construction of the power plant indicate that the construction removed what was probably residential architecture but no large mounds or communal architecture. The nucleus of monuments at this site has been severely damaged by earthmoving activities during the past 10 years. Air photos taken in 1969, before construction of the power plant, show an extensive platform along the west flank of the main mound. This platform has been largely destroyed by heavy machinery that left only three fragments, slices of the platform that remained between passes of the bulldozer's blade. The present surface, below the removed platform mound, is covered with remains of shicra and angular rock. Portions of rooms with plastered floors and stone walls that

have been mortared together and finished with a fine layer of plaster are among the features that can be seen in the remaining fragments of the platform.

The local power company did not recognize the presence of an archaeological site in this locality and in 1987, according to local residents, decided to "improve" the power plant's surroundings for the benefit of the local community and to increase the terrain appropriate for housing in the vicinity. A bulldozer was also used somewhat randomly on other parts of the site, destroying portions of a number of other features, including a swath through the middle of the second circular plaza. Between January and May 2001, an attempt was made to dig a well in the floor of the main circular plaza at the base of the central platform mound. The well was left unfinished when a depth of about 2.5 m did not reach water.

In addition to the modern and historic disturbance, part of the Late Archaic component of Upaca appears to have been disturbed by a later prehistoric occupation. A cemetery adjacent to the main mound includes burials with associated ceramics. A group of small structures were built within the circular plaza. These are associated with surface ceramics.

At Upaca, PANC teams cleared three profiles, each 3 m wide, and excavated two test pits: as mentioned, a remnant of an auxiliary platform attached to the west side of the principal mound in Sector A was largely destroyed by a bulldozer, but three 2-m-high strips of construction were left intact. Profile 1 was placed in one of the exposed, remnant sections of the west platform. A detailed drawing was made and samples of shicra and other organic materials were collected for radiocarbon dating.

Profile 2 in the main mound of Sector A was cleared in an area that had been cut by a bulldozer along the western face of the mound. The bulldozer cut is almost 100 m long, and a portion in the center was cleared to examine and draw a complete profile from the top to the base of the mound to collect shicra samples.

Profile 3 focused on a deep looter's hole that had been dug into the center of a mound in Sector B. The structure is located 300 m south of the main mound in Sector A. *In situ* organic material was clearly visible in the exposed profile and provided samples for radiocarbon dating.

Test unit DN-1 was excavated in the area of these possible storage structures in an effort



Upaca

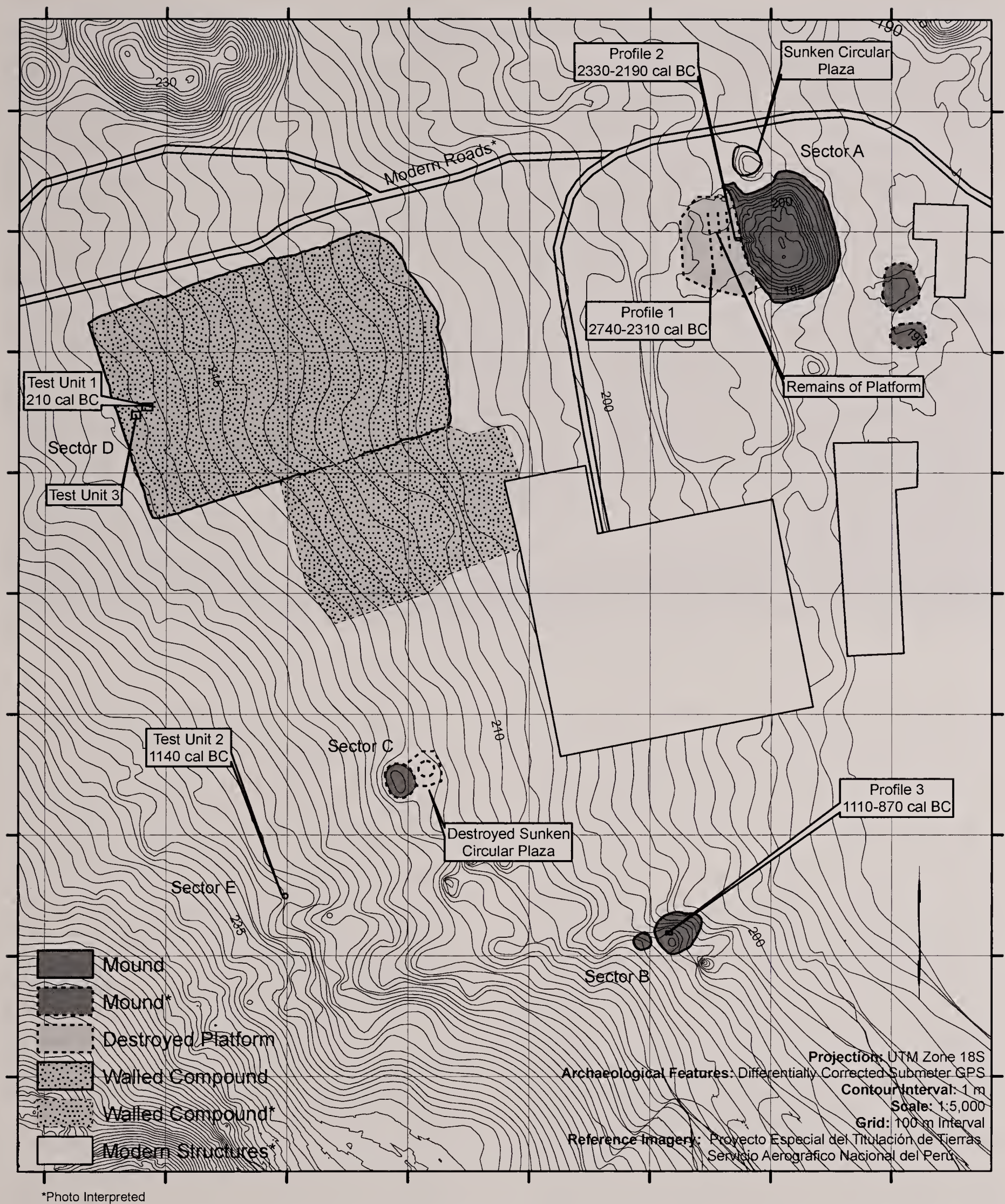


FIG. 3. Map of Upaca showing mounds and other features, sectors, canals, roads, and encroaching structures.

to determine the date of these structures. Test unit 2 was excavated an area of undisturbed residential trash in Sector E. In each unit, we collected samples for radiocarbon dating as

well as samples for pollen analysis, macrobotanical remains, fauna, and lithics. All test pits were 1 × 2 m and were excavated to sterile subsoil.





FIG. 4. Depressions in walled compound in Sector D, Upaca (J. Haas).

SECTOR A: PROFILE 1, WEST PLATFORM—Profile 1 is located in Sector A at Upaca, on the auxiliary platform west of the principal mound. Because of extensive modern damage, this area was identified as a platform mound on the basis of historical air photos. The three remnant “slices” of the mound are each about 50 m long and 1–4 m high. For the present investigation only a portion of the east face of the central remnant “slice” of the west platform, 4 m long and 1.6 m high, was cleared and profiled.

Screening the debris from Profile 1 yielded mollusk shells, lithics, small textile fragments, coprolites, and plant remains, including shicra fragments, gourd fragments, carbonized seeds, and plant stems. Numerous fragments of mortar were recovered that we associate with construction, remodeling, and destruction of the platform. The mortar consists of clay mixed with plant fiber. Fragments often hold impressions of cane stems and rocks or have a flat or plastered surface from a wall or floor.

The profile includes the following stratigraphic units (Fig. 5):

1. Surface level of disturbed sediment containing loose small to medium-sized rocks.
2. Layer of medium-grained, dark gray soil compacted within the structure defined by Wall 3 on the west. Cultural material was also present, including a few mollusk shells, plant remains, and loose rocks. ISGS-5395 was obtained from annual plant fiber collected from this area, dating to 2650 Cal B.C. (Table 4, 1F).
3. This deposit includes rocks and fragments of mortar along with plant remains. A number of thread or string fragments were found in this layer, and a radiocarbon sample was collected from the plant fibers present (GX-30117) of 2740 Cal B.C. (Table 4, 1E).
4. Floor of fine clay associated with Walls 2 and 3. A basin 40 cm deep extended below this floor. This feature was covered with a layer of clay that was subsequently been replastered, suggesting that this may be the remains of a basin hearth.
5. Wall 2 was constructed of angular rock, mortared with a mix of clay and plant fibers and finished with a coat of fine plaster.



6. Fill of clumps of clayey soil or construction fill (rock, mortar, and plant remains), filling the space between Floor 4 above and Floor 14 below.
7. Construction fill of medium to large-sized stones, hard fragments of construction mortar, or clayey sediment mixed with plant fibers. This is the material into which the basin hearth (item 4 above) was built.
8. Rocky construction fill with numerous medium-sized rocks and a few medium-sized hard chunks of clay mortar or clayey sediment.
9. Construction fill of shicra bags on both sides of the profile was sampled and provided two dates: ISGS-5291, 2310 Cal B.C., and Beta 177319, 2350 Cal B.C. (Table 4, 1A, 1B).
10. Wall 3 was built of angular rock held together with mortar and covered with plaster, associated with Floors 4 and 14. Wall 3 also represents a remodeling or rebuilding of the room bounded by Wall 4.
11. Floor of fine clay associated with Wall 4 that extends beneath Wall 3.
12. Wall 4 was constructed of mortared rock and covered with plaster.
13. Angular rock with compact mortar. This appears to be the base of Wall 2.
14. Fine clay floor associated with Wall 3.
15. Loose fill of small to medium-sized clumps of clay mortar and rock.
16. Wall 1 was built of mortared rock and finished with plaster. This appears to be the oldest element present in Profile 1.

Analysis identified four phases of occupation of the platform mound. Phase 1 corresponds to the closure of the site and the postabandonment period. This includes the two layers of fill immediately above Floor 4. Layer 3 yielded a date of (GX-30117) 2740 Cal B.C. and Layer 2 (ISGS-5395) 2650 Cal B.C. These are the oldest dates of those obtained from this profile.

Phase 2 can be associated with the occupation of Floor 14, associated with the first use of Wall 3. This layer also includes the use of Floor 4, associated with Wall 3, Wall 2, the possible pit hearth, and the fill between the two floors (Layer 6). Layer 13, the fill associated with Wall 2, may also date to this layer.

Phase 3 includes the occupation of Floor 11, which was constructed over construction fill in areas 8 and 9 dated to (ISGS-5291) 2310 Cal

B.C. and (Beta 177319), 2350 Cal B.C. The plaster on Floor 11 did not appear to extend up onto the side of Wall 4. This suggests Floor 11 was in use at a point following the building of Wall 4, not necessarily when the wall was first constructed.

Phase 4 corresponds to the oldest occupation that can be recognized in the area cleared and includes only Wall 1. In the profile, the floor associated with this wall cannot be seen, as the wall continues below the bottom of the profile cut.

**Conclusions**—Four of the radiocarbon samples from this profile were submitted for analysis and yielded dates from  $4180 \pm 110$  to  $3850 \pm 70$  RCYBP (2740 to  $\sim 2310$  Cal B.C.) (Table 4). The radiocarbon results from Profile 1 strongly suggest that the exposed portion of this platform was constructed shortly after 2300 B.C. based on the similar dates from two samples from Layer 2 construction fill. The other two dates from this profile are substantially earlier than those from the shicra bags in the earlier construction fill. A possible interpretation of this outcome is that the fill comprising Layers 2 and 3 includes disturbed material. The earlier dates obtained from these fill samples suggest that the profile displays one of the later construction layers, and that the lower portion of the platform that remains unexcavated dated between 2700 and 2600 B.C. Earthmoving in Sector A could have displaced earlier materials that were sampled and dated from the uppermost deposits in Profile 1 in a kind of reverse stratigraphy.

**SECTOR A: PROFILE 2, MAIN MOUND**—Profile 2 is located in Sector A on the west side of the main mound. An area approximately  $3 \times 12$  m was cleared, extending to the top of the mound.

The entire west side of the main mound has been cut by the activity of heavy machinery. A trail made by a bulldozer crosses the west face of the mound. Although the trail has not been used recently, these activities disturbed the mound beneath it to a depth of 2 m. This action left the side of the structure exposed and permitted us to record the construction features on this side of the mound.

At the time Profile 2 was being cleared, the surface of the mound was covered with stone, and no architectural remains were visible. The rock that covered the surface was angular, medium to large-sized fragments. Clearing the exposed profile revealed a substantial damaged area. Cultural material recovered included lithics, mollusks, fauna, textiles, coprolites,



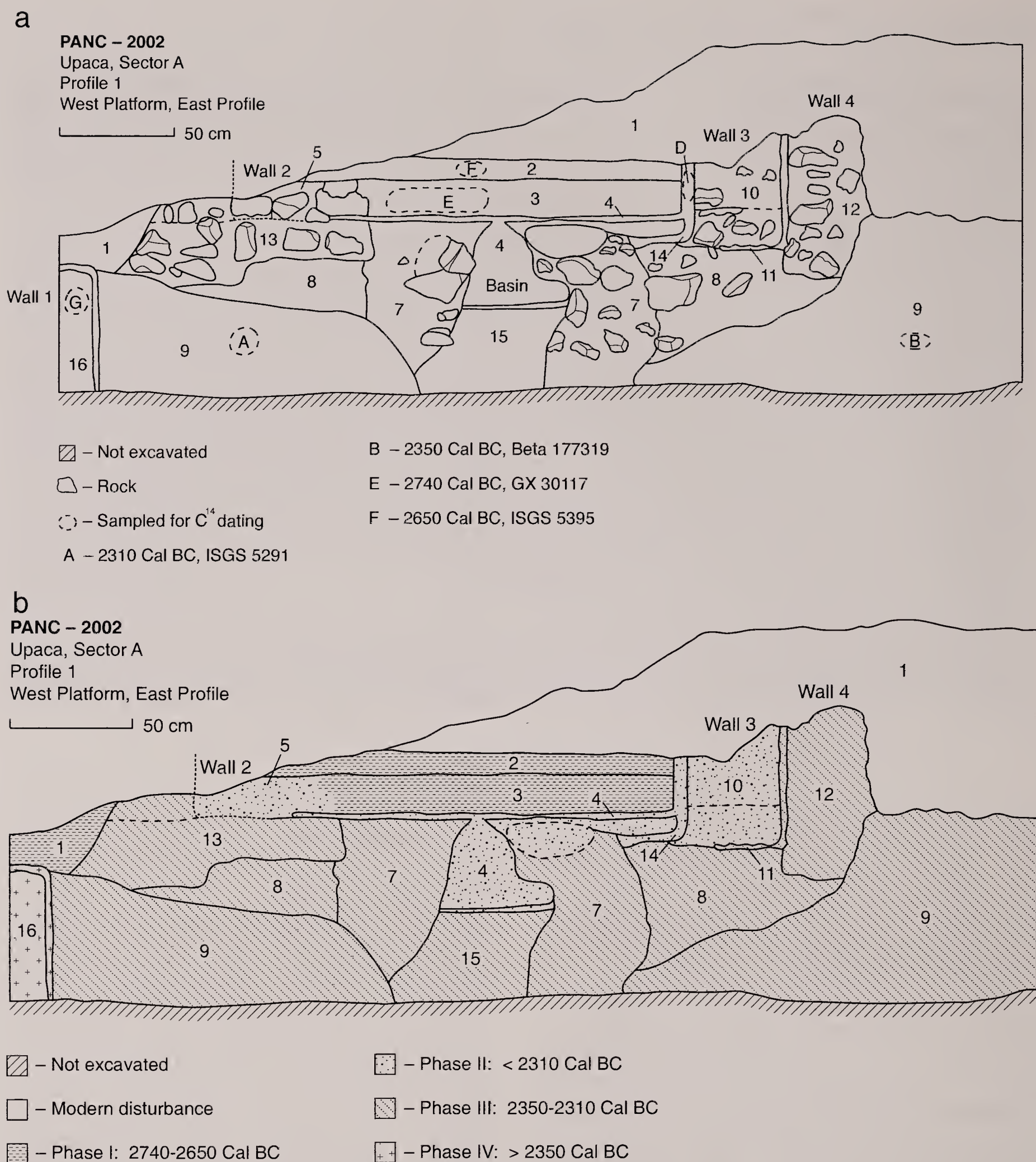


FIG. 5. Upaca, Sector A, Profile 1, platform attached to main mound.

a brilliant green feather, botanical material, seeds, corn, and shicra bags in secondary context. No distinctive whole artifacts were recovered from this location, a pattern that proved common in testing Late Archaic sites. A large quantity of the stone visible in the profile is loose rock without mortar. These loose rocks may have been piled or shifted to facilitate the passage of heavy machinery. The absence of

mortar suggests these rocks have been exposed to the elements for an extended period of time.

The profile included the following stratigraphic units (Fig. 6):

1. Angular rock consisting primarily of fragments greater than 20 cm on a side

Floor 1: Fragments of a gray-colored clay floor

TABLE 4. Upaca radiocarbon dates from samples obtained in 2002.

Provenience	Text and illustration location	Material	Lab no.	Cal. B.C.	RCYBP	<sup>12</sup> C/ <sup>13</sup> C	Sample-weight (g)	Calibrated age		Calibrated age range 2 sigma (95.4%) B.C.
								range 1 sigma (68.3%) B.C.		
Mound A, Profile 1 Mound A, Profile 1	1B	Fiber bag	Beta-177319	2350	3880 ± 60	-9.5	15	2461–2289 (100.0)		2500–2541 (.7), 2491–2196 (94.7), 2167–2144 (1.9)
	1F	Mixed plant fibers	ISGS-5395	2650	4080 ± 70	-11.5	10	2857–2813 (19.0), 2739–2725 (4.9), 2697–2559 (62.3), 2535–2531 (1.4), 2524–2496 (12.5)		2873–2799 (18.1), 2784–2470 (81.9)
Mound A, Profile 1	1E	Mixed plant fibers	GX-30117	2740	4180 ± 110	-24.3	6.6	2885–2621 (97.8), 2907–2601 (2.2)		3021–2468
Mound A, Profile 1	1A	Fiber bag	ISGS-5291	2310	3850 ± 70	-10.9	15	2455–2441 (5.8), 2435–2421 (5.5), 2404–2360 (20.2), 2354–2269 (42), 2260–2203 (26.5)		2546–2455 (.1), 2488–2479 (.5), 2474–2133 (97.4), 2080–2047 (2)
Mound A, Profile 2	2B	Mixed plant fibers	ISGS-5280	2190	3770 ± 70	-11.2	15	2294–2124 (80.9), 2096–2090 (1.9), 2084–2040 (17.2)		2456–2421 (2.7), 2404–2358 (4.9) 2354–2014 (90.7), 1997–1979 (1.8)
Mound A, Profile 2	2E	Mixed plant fibers	ISGS-5294	2270	3820 ± 70	-10.8	12	2401–2377 (9.2), 2350–2191 (76.8), 2178–2142 (13.9)		2466–2123 (94.2), 2096–2040 (5.8)
Mound A, Profile 2	2A	Mixed plant fibers	ISGS-5295	2270	3820 ± 70	-12.8	11.8	2401–2377 (9.2), 2350–2191 (76.8), 2178–2142 (13.9)		2466–2123 (94.2), 2096–2040 (5.8)
Mound A, Profile 2	2C	Mixed plant fibers	ISGS-5296	2330	3860 ± 70	-12.2	8.6	2457–2417 (17.7), 2409–2278 (65.5), 2252–2230 (10.9), 2220–2201 (5.9)		2554–2539 (.9), 2483–2136 (98.5), 2078–2066 (.6)
Mound B, Profile 3	3B	Fiber bag	Beta-177321	870	2700 ± 60	-25.4	14	898–808		996–989 (.9), 974–792 (99.1)
Mound B, Profile 3	3A	Mixed plant fibers	ISGS-5281	1110	2910 ± 70	-25.1	12	1255–1244 (4.3), 1212–1198 (6), 1193–1138 (24.1), 1133–1001 (65.5)		1367–1362 (.4), 1314–916 (99.6)
Mound B, Profile 3	3D	Fiber bag	GX-30118	1110	2910 ± 80	-22.1	5.5	1257–1237 (7.2), 1215–998 (92.8)		1371–1357 (.012), 1317–902 (97.9), 1352–1314 (.9)
Sector D, Test Unit 1	T1	Charcoal	ISGS-5273	210	2160 ± 70	-26.3	6	356–288 (34.2), 257–256 (4.9), 233–107 (60.9)		383–44 (100.0)
Sector E, Test Unit 2	T2	Charcoal	ISGS-5275	1160	2950 ± 70	-26.0	5	1287–1283 (1), 1261–1046 (99)		1380–1335 (5.4), 1321–973 (93.5), 956–942 (1.1)



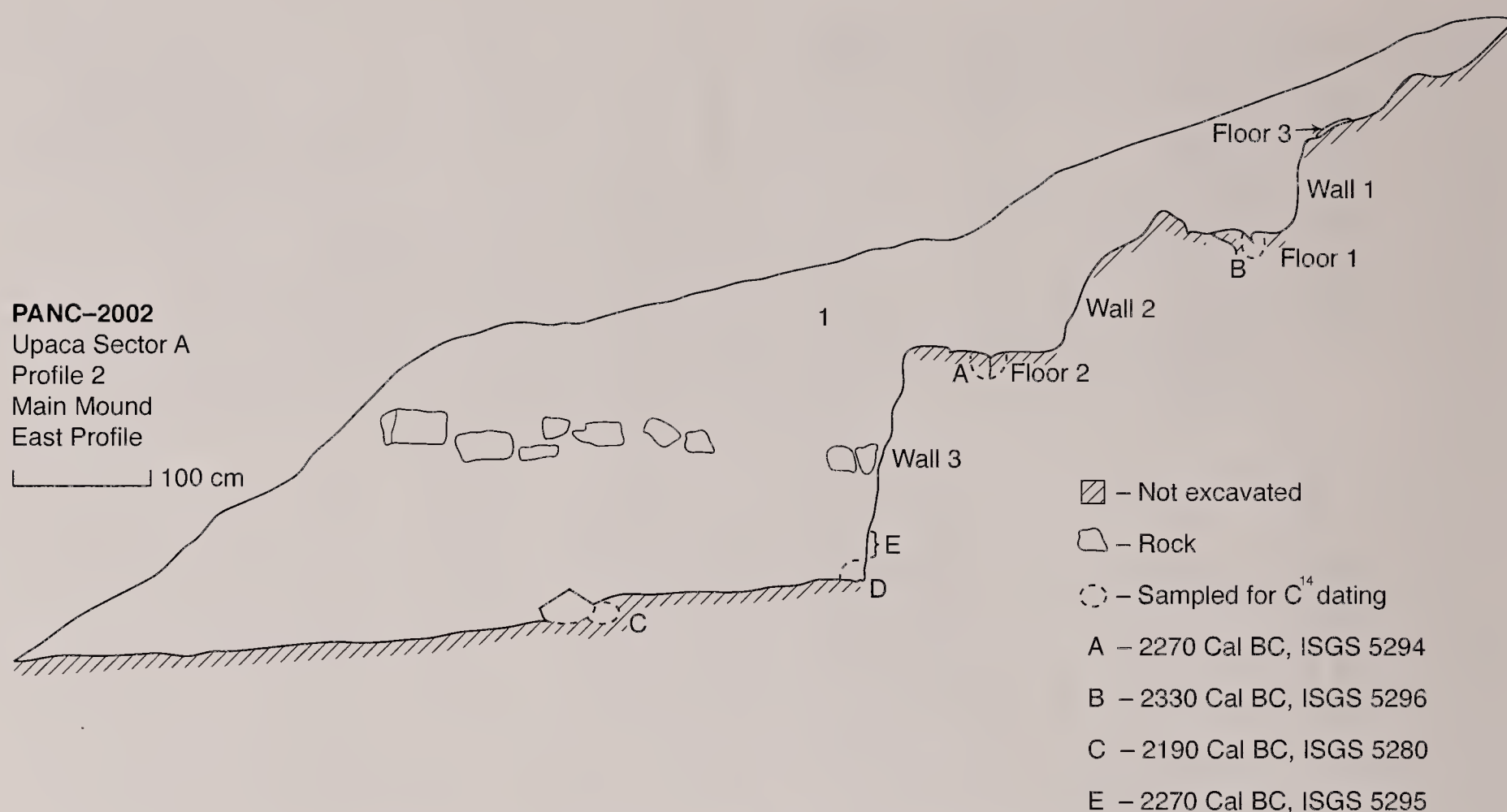


FIG. 6. Upaca, Sector A, Profile 2, west side of main mound.

Floor 2: Fragments of floor, a mix of gray clay and small stones

Only one phase of ancient occupation could be clearly identified in this profile, as the area cleared was covered with a continuous layer of plaster. The bulldozer disturbed the area at the foot of the profile, but the profile itself proved to be an undamaged exterior surface of the mound (Fig. 7). A later phase may be indicated by the patch of Floor 3 remaining at the top of Wall 1. This small area was a paler color and a finer texture than the plaster on the rest of the profile and may indicate a late replastering that was not carried out across the entire structure. No excavation into the mound itself was carried out, and samples for radiocarbon dating were obtained from the disturbed area at the base of the mound, where shicra bags were exposed, and in places at the top of each retaining wall where the upper plastered floor surface was damaged and shicra bags were visible. Samples were also collected from fiber present in wall plaster.

**Conclusions**—Four samples from Sector A, Profile 2, were submitted for radiocarbon analysis. Floor 1 yielded a date of 2190 Cal B.C. and Floor 2 a date of 2270 Cal B.C. A shicra bag at the base of the excavated area yielded a date of 2330 Cal B.C., while fiber from a plaster on Wall 1 dated to 2270 Cal B.C. These dates suggest that the mound was completed and

covered with plaster by 2270 Cal B.C., though its construction took place earlier, by 2330 Cal B.C., based on the earlier date from a shicra bag, clearly used in construction. These dates come from the uppermost layers of construction and plastered surfaces. Interior portions of the mound and the unexcavated portion of the mound below the present ground surface are all assumed to be older.

**SECTOR B: PROFILE 3**—Sector B is at the extreme southern end of the site. The central feature in this sector is a small mound of angular rock, though some rounded river cobbles are scattered around the upper surface of the mound. The mound is rectangular, approximately 15 × 20 m at the base and an average of 6 m high.

A hole roughly 2 × 2 m and 2.2 m deep is visible at the top of the mound, which exposed a series of rooms. Since the unit was left open, it was initially believed to be the work of looters, despite its rectangular shape, since no report of archaeological investigation of this description at Upaca has been identified. When a series of 1 × 2-m test pits were identified extending across the site below a set of transmission lines, investigation revealed that these were part of an evaluation associated with expansion of the electrical power plant (Cordova Herrera 2001). The hole in the top of Mound B may have been





FIG. 7. Photo of the northwest facing side of the main mound at Upaca in the area cleared as Profile 2 (W. Creamer).

excavated as part of this evaluation, though it is not mentioned in the report.

The hole in Mound B appears likely to have been made at the time the power line was installed nearby. The open hole revealed segments of walls, some unfinished and some finely plastered, along with layers of construction fill. Shicra bags used in the mound construction were also visible. The surfaces exposed did not contain ceramics, and many mollusk valves and flakes of stone were present both in the deposits and on the surface. The mound has also been disturbed on its northeast corner, where an irregular-shaped, shallow pit revealed plastered wall surfaces.

Profile 3 was positioned to take advantage of the faces of the hole on the top of the mound and its four exposed profiles. The east and west profiles were cleared and drawn. Several superimposed floors were identified, along with two walls, which delimited a narrow passageway blocked by a sloping wall. Screening the sediment associated with this profile yielded a num-

ber of mollusk shells, lithics, small textile fragments, botanical remains including fragments of shicra bags, gourd fragments, carbonized seeds, plant stalks, mortar and wall fragments covered with plaster painted white, red and orange.

The west profile of the looted area in Mound B included the following units (Fig. 8A):

1. Fill of loose, angular rock.
2. Fill of construction debris with a few rocks. Embedded plant fibers are visible across the north face of the profile. It is not clear whether these are discarded fragments, fragments shed from construction fill, or parts of shicra bags. A sample of these fibers dated to 870 Cal B.C. (Beta 177321).
3. Lens of clayey sediment of a light beige color that appears to have been deposited by wind or water.
4. Fine clay floor (Floor 4) associated with Wall 4. Destruction of a wall at the north end of the profile is represented by the upturned edge of the floor that suggests a wall was present when the floor was laid but is no longer there. An even more prominent turn in floor material is visible in the lower section of Floor 4.
5. Fill having a fine, soft texture from the presence of clay. Lumps of clay, possibly mortar fragments, are also present.
6. Fill of medium-sized rocks with medium-sized clods of clayey soil, shells, and plant remains. This appears to be a zone in which walls of the room fell in. From plant fibers in this area, a date of 1110 Cal B.C. was obtained (ISGS-5281).
7. Floor of fine white clay.
8. Fill of small clumps of clay or mortar and small stones with numerous plant fragments.
9. Fill of medium-sized rocks and some clumps of clayey soil and lumps of mortar.
10. Wall 1, made of plaster-covered, mortared rock finished with fine layer of white plaster.
11. Wall 2, made of plaster-covered, mortared rock finished with fine layer of white plaster. A hole in the plaster covering Wall 2 permitted us to collect plaster fragments and extract plant fiber from it for a radio-carbon date of 1110 Cal B.C. (GX-30118).
12. Wall 3, made of plaster-covered, mortared rock finished with fine layer of white plaster.



13. Wall 4, made of plaster-covered, mortared rock finished with fine layer of white plaster.
14. Fill of rock and construction debris. This formed the floor of the hole and no additional excavation was carried out.

Analysis of both the east and west profiles allows us to identify four phases that can best be seen in the west profile.

Phase 1 corresponds to the closure or abandonment of the structure when the fill in Layer 2 was added (Fig. 8B). Layer 1 is an intrusion into this fill in the south corner of the west profile. At the interface between these two units, a ceramic sherd was found, part of a neckless jar.

Phase 2 includes the occupation of Floor 4, constructed over fill of Layer 6. What remains of Wall 4 stands 25 cm high and is topped by a patch of clay that may be a patch of floor or the surface of a step.

Phase 3 includes occupation of Floor 7, which is associated with the fill in Layers 8 and 9. Construction during this phase covered Wall 3 but is associated with Wall 1.

Phase 4 corresponds to the occupation beginning with construction of Walls 1, 2, and 3. Wall 2 is slightly inclined toward the interior of the mound, and at its lower end is a step that goes in the same direction. On the extreme east end of Wall 3, a few centimeters from the east profile, is one side of a niche filled during later construction.

**Conclusions**—Based on the architecture and the material observed in the exposed profiles, it appeared that the mound in Sector B was not constructed during the Late Archaic. Three samples submitted for analysis from this profile yielded dates of 870 Cal B.C. and two dates of 1110 Cal B.C. (Table 4). Those first millennium B.C. dates, during the Initial period, suggest alternative interpretations. The Sector B mound lies far enough from the main mound at Upaca that it could date to another period, an example of reuse of the Upaca locality. The only aspect of Profile 3 that suggests an earlier date than that obtained from radiocarbon dates is the fact that only one ceramic fragment was recovered from this locality. However, the dates come from clear contexts, so they are likely to be correct. Sector B could date to a later period at Upaca, or it may be a separate and later occupation.

**SECTOR C**—Sector C includes the extreme southwest portion of Upaca. It includes a small

rectangular platform mound with a sunken circular plaza. The approximate dimensions of the mound are  $10 \times 20 \times 5$  m, while the circular plaza is about 20 m in diameter. As in Sector B, the principal construction material is angular rock, though some river cobbles were observed on the surface of the mound.

The structures on the upper part of the mound in the central area are double-faced walls and small rectangular rooms approximately  $2 \times 3$  m. The circular plaza has been damaged by heavy machinery. On the surface of this sector, mollusk valves, organic materials, and fragments of flaked stone are visible. This mound is the second with a sunken circular plaza within the site. It is one of the smallest mounds that has been reported associated with a circular plaza, but the architectural characteristics suggest the mound dates to the Late Archaic period. No research was conducted in this sector. The bulldozer trench through the circular plaza appears to have been random destruction, as there is no evidence of looting.

**SECTOR D: TEST UNIT 1**—Sector D is located in the northeast portion of the site, 400 m west of the principal mound (Sector A). Sector D includes an extensive area of regularly spaced depressions aligned in rows that suggests an intentional layout. The depressions do not display any architectural features, but they are similar in size, approximately  $4 \times 5$  m and regularly distributed across an area some  $200 \times 200$  m. These depressions appeared to have been storage spaces, probably pits that were not roofed, but were covered with matting, cloth, or some similar material to protect the contents. A stone wall at least 2 m thick surrounds these features, which may have been a row of masonry structures that served as a walled border. Fragments of ceramics are visible on the surface, along with flakes of stone and mollusk valves.

There is some evidence of excavation by looters in this area. There is also a series of open test pits each approximately  $1 \times 2$  m extending across Sector D. During surface examination of the site, ceramics, lithics (including a bifacial tool), and botanical remains were found in the excavated fill of several of these pits, which was heaped at the side of each unit. Subsequent research suggests these excavations were carried out by Cordova Herrera (2001), who conducted the work for the power company at a time they sought to increase the number of transmission



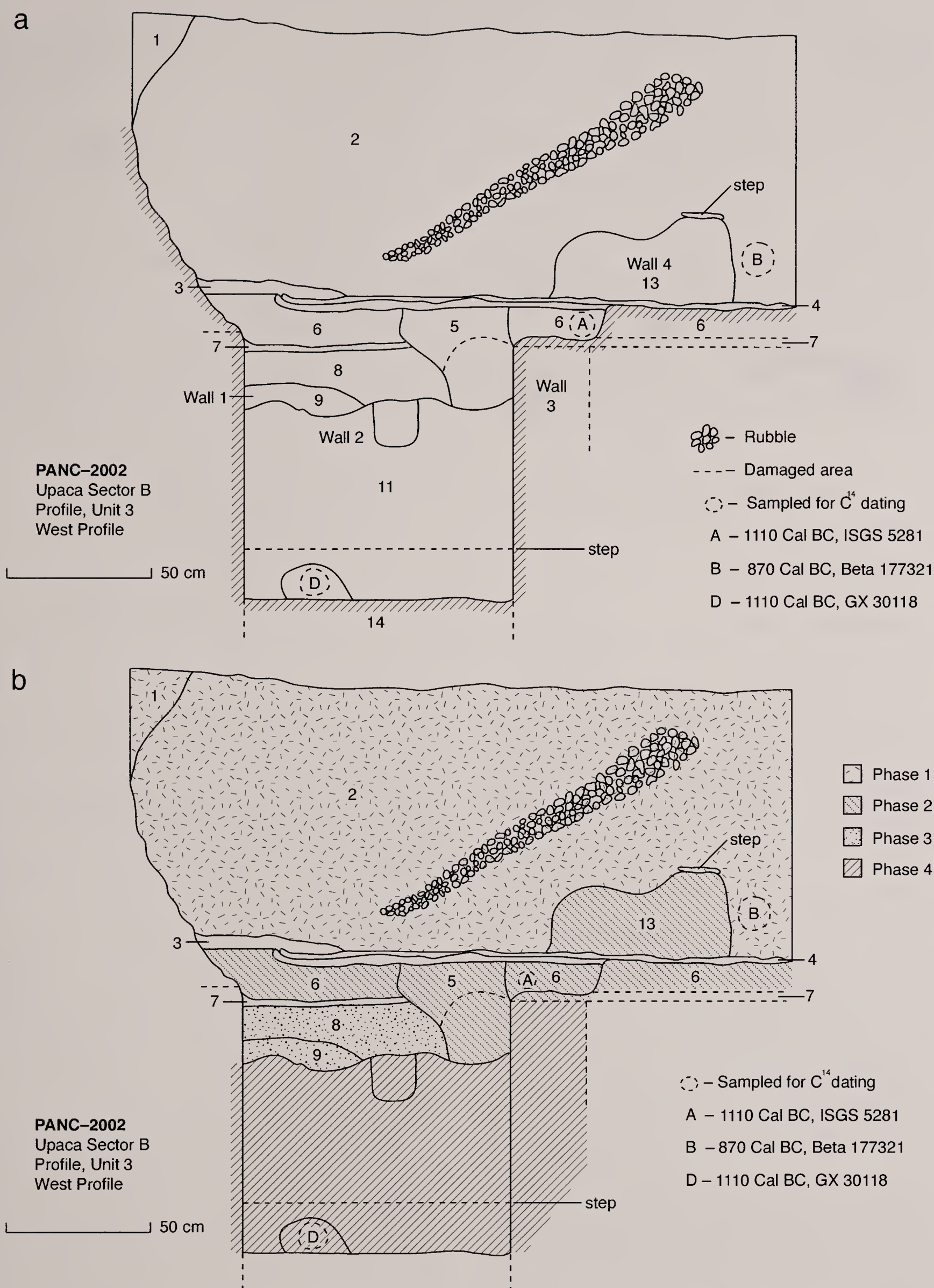


FIG. 8. Upaca, Sector B, Profile 3, (A) Excavated units and carbon sample locations. (B) Construction phases.

50 cm

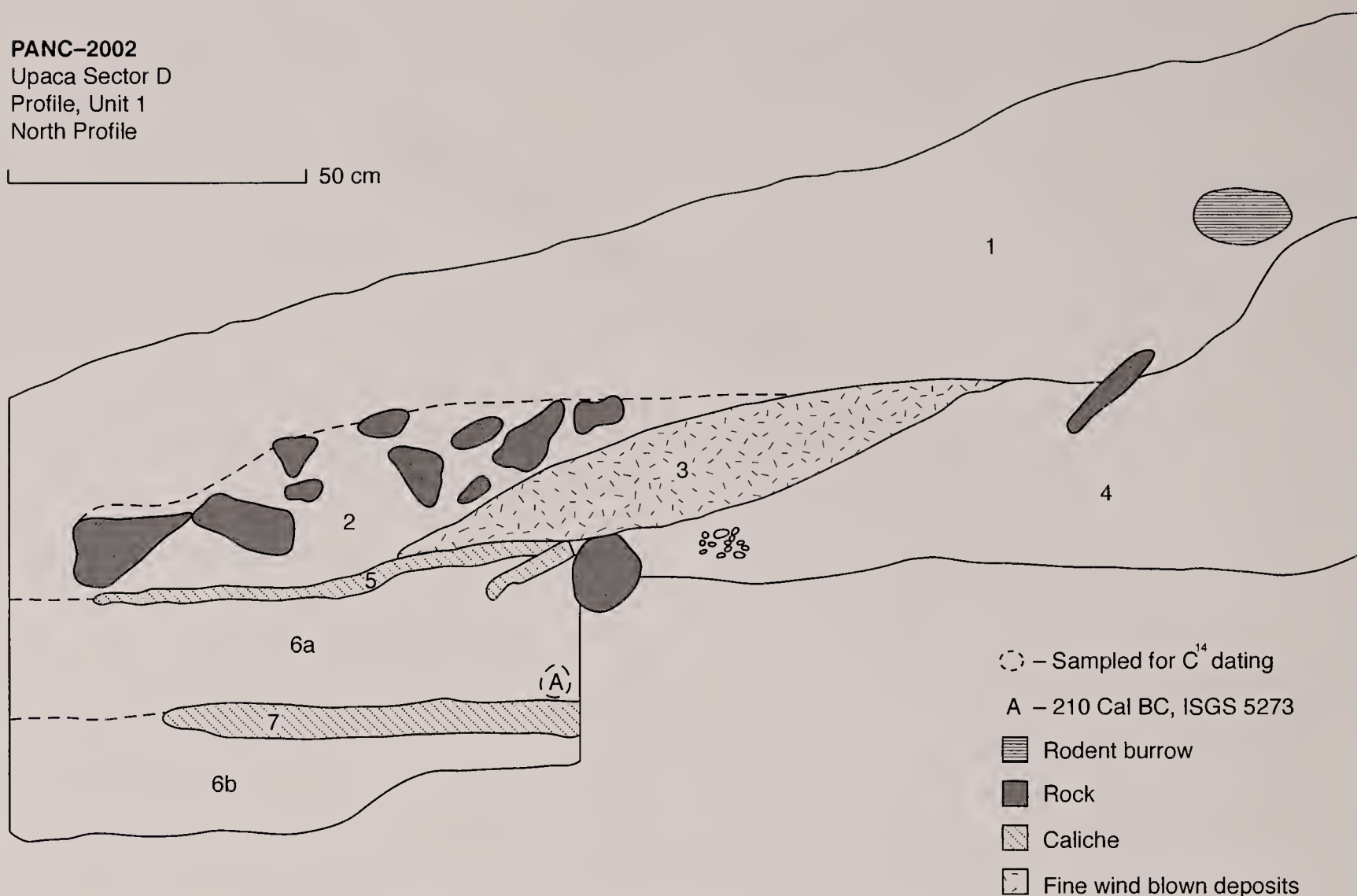


FIG. 9. Upaca, Sector D, Test Unit 1, excavated units.

poles crossing the site. Despite the presence of these artifacts and others visible in the strata of the open pits, the area tested was declared clear of any cultural remains, and additional posts were set in place in the site.

**SECTOR D: TEST UNIT 1**—This unit was  $1 \times 2$  m in size, located within one of the rectangular structures which cover this sector. A datum was set 5 cm above the present ground surface, and arbitrary excavation units of approximately 15 cm were employed. The first level began at 40 cm below datum. On the surface were angular stones, many small stones, and flakes. The sediment was dark gray, loose-textured, and composed of fine sand, which was found beneath a maroon-colored burned area. On the east side of the unit was a hard patch of sediment. None of the distinctive surface materials continued in the excavated layers. From this unit lithics, mollusk shells and botanical remains, including flotation and pollen samples, were recovered.

Seven levels were excavated before sterile subsoil was reached. While recording and drawing the levels, it was possible to identify the different natural and cultural levels present (Fig. 9).

**Layer 1:** Compact sand with small angular gravel less than 5 cm. This constitutes about 30% of the fill in this layer.

**Layer 2:** Groups of large rocks separated by loose sandy sediment containing botanical remains.

**Layer 3:** Sandy laminated sediment with bands of small rocks less than 5 cm on a side.

**Layer 4:** Small angular rock, less than 3 cm on a side at the east side of the unit, gradually changing to 5–7 cm on the west side. In this layer, there is also compact sandy sediment, a large quantity of charcoal, and mollusk fragments.

**Layer 5:** Compact lens of hardened and calcified salt deposits (caliche).

**Layer 6a:** Small angular gravel compacted in sandy sediment. Gravel dimensions less than 5 cm. A chunk of charcoal was collected in this level that provided a date of 210 Cal B.C. (ISGS-5273).

**Layer 6b:** Small angular gravel compacted in sandy sediment. Gravel dimensions greater than 5 cm.

**Layer 7:** Compact lens of hardened and calcified salt deposits (caliche).

Analysis of the excavation suggests the data represent three phases of possible use and abandonment.



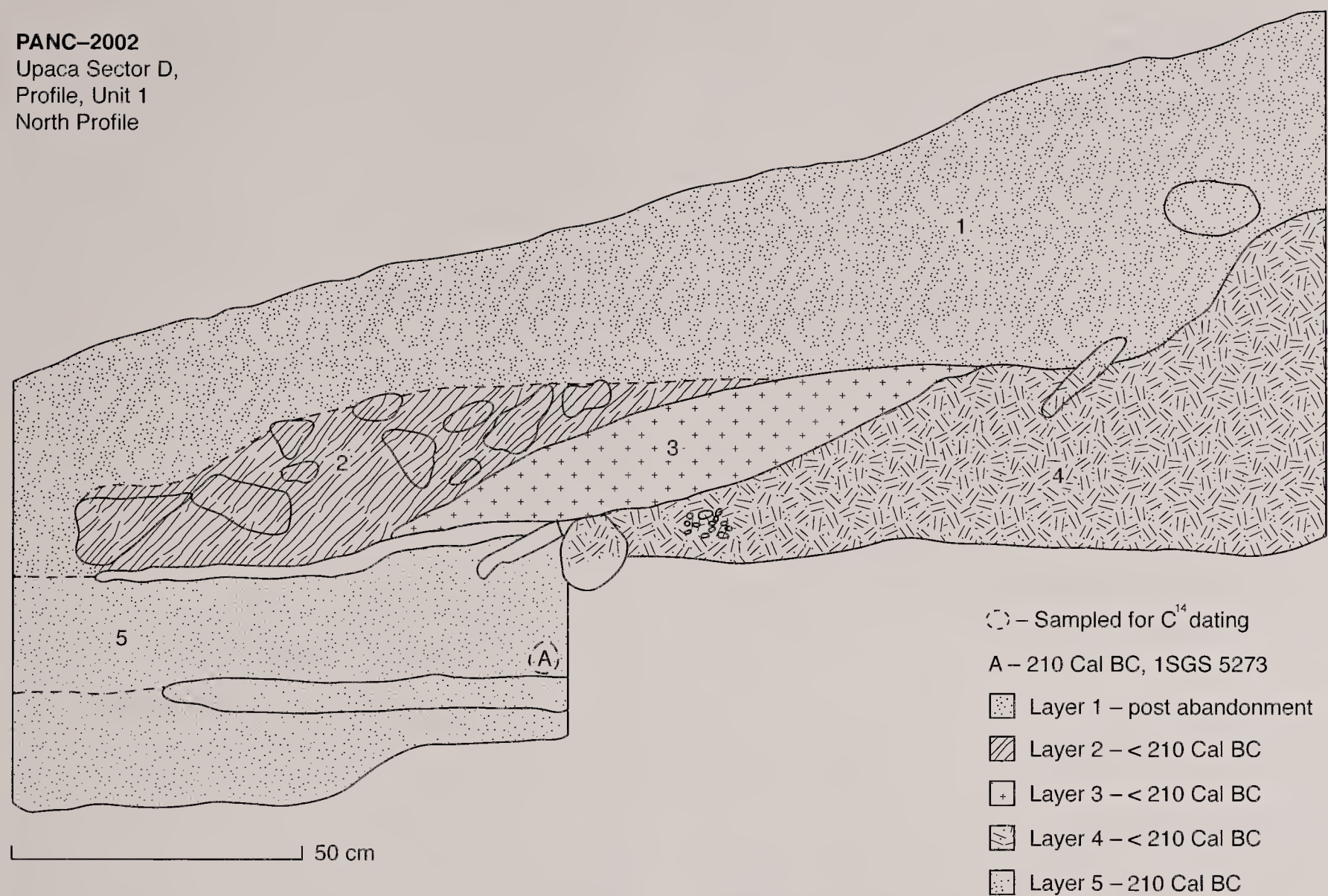


FIG. 10. Upaca, Sector D, Test Unit 1, phases.

Phase 1 is the uppermost deposit, Layer 1 (Fig. 10). This is a substantial layer of post-abandonment fill, probably the result of wind and to a lesser extent water from occasional rain.

Phase 2 appears to be an episode of disposal of rock and trash. The rock in Layer 2 was deposited on a sloping layer of laminated sediment banded with small angular gravel. The laminated material, Layer 3, appears to be a wind deposit, suggesting some time elapsed with the surface exposed to the elements between deposition of Layers 2 and 4. Layer 4 includes material deposited on a sloping surface, perhaps the side of the depression visible on the surface. Abundant charcoal and mollusk remains suggest that this was a trash deposit. Together, the Phase 2 deposits had a leveling effect, the three episodes of deposition turning a sloping surface into a horizontal one.

Phase 3 is the earliest visible and is found in excavation Layers 5–7. These were probably initially a single deposit and the caliche in Layers 5 and 7 formed *in situ*. The single radiocarbon sample from this unit came from Layer 6. The

date of 210 Cal B.C. (ISGS 5273) comes from charcoal and may date earlier than comparable samples of annual plant fiber as a result of the old wood problem.

**Conclusions**—Only a single radiocarbon sample was recovered from Sector D, Unit 1, 210 Cal B.C. (ISGS 5273), from a charcoal fragment. This provides only minimal dating of the area but places this compound during the Early Horizon. The date comes from below the clearest levels of intentional deposition, Layers 2, 3, and 4. The area of Upaca covered by regularly spaced pits, therefore, appears to be a feature postdating the construction of the main mound and other structures in Sector A.

The walls or outer margins of the depression could not be clearly identified during excavation or from a close examination of the profile of this unit. These depressions are proposed to have been rooms or storage spaces, though the function and construction of these features is not clear in the areas excavated. The radiocarbon date of 210 Cal B.C. suggests the circular features in Sector D appear to have been in use during the Early Horizon (900 B.C.–A.D. 200).



PANC-2002  
Upaca Sector E  
Profile, Unit 2  
Southeast Profile

50 cm

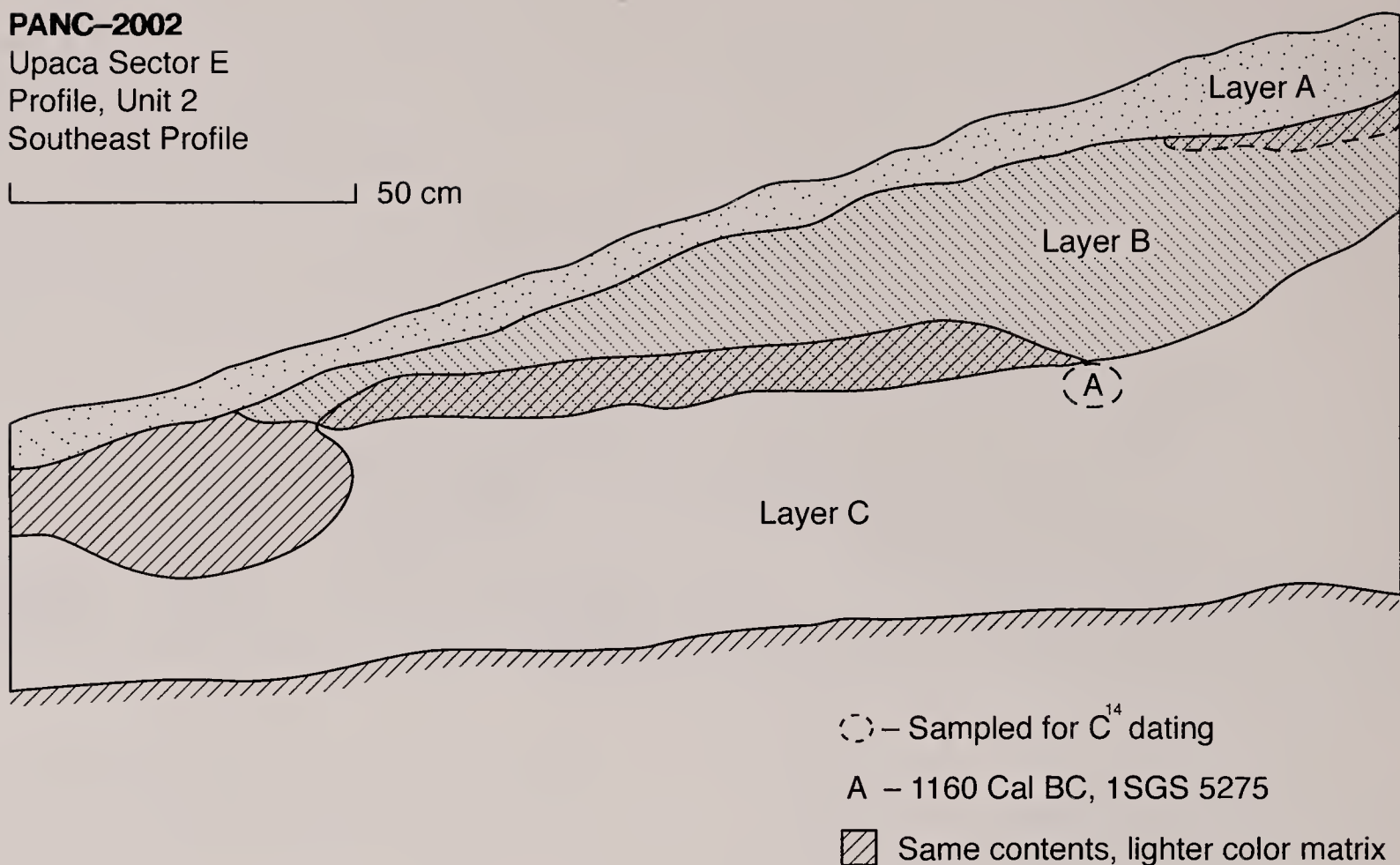


FIG. 11. Upaca, Sector E, Test Unit 2.

**SECTOR E: TEST UNIT 2**—This sector is located in the southwest portion of the site and includes the area that slopes toward the hills as well as a portion of the hillside. On the surface, a large number of rocks can be seen, and in spaces among the rocks, some mollusk shell is also visible. Within this sector there is also part of a prehispanic road that crosses the site following the middle of the hill slope. It is possible to identify two terraces in this sector, one of which is associated directly with the road, while the second terrace has stone flakes and the remains of mollusks on its surface. Test Pit 2 was placed on this terrace at the extreme southern end of Sector E, on a slight slope that extends from a small terrace about  $6 \times 9$  m (Fig. 11). This unit was excavated in natural layers.

Layer A included many angular rocks of medium and small size distributed homogeneously in fine loose soil. A few fragments of mollusk shells were present along with a small quantity of ceramics. There were also pupa casings of flies and small fragments of charcoal. This layer was formed by aeolian deposition over domestic trash. The presence of fly pupae indicates that this trash was not buried but was left exposed.

Layer B consisted of very fine, loose, light gray soil, darker than that in Layer A, with a large number of angular rocks of medium and small size distributed evenly through the level. The

layer included a large number of mollusk valve fragments, a small quantity of ceramics (distinguished by an incised decorated fragment), some botanical remains (plant stalks), and pieces of charcoal, all of which were distributed evenly across the unit. In addition, a coprolite and a fragment of quartz were found. This layer was formed by the deposition of domestic trash.

Layer C was composed of a large quantity of angular rock of all sizes, small to large, in a fine, beige sediment. Cultural material was present only in the upper part of this layer, the interface with Layer B, including minimal quantities of mollusk shells and botanical remains. This was a natural layer, part of the natural deposition and slope of the hill, that displayed cultural material only at the interface with Layer 2.

**Conclusions**—The excavation data indicate one phase of occupation in this area. Each layer, A and B, indicates an episode of deposition. The surface material, Layer A, was windblown sediment deposited by natural forces after abandonment of the locality and long after its use as a midden. Layer B includes the midden deposit. One sample of charcoal from Layer C yielded a date of 1160 Cal B.C. (ISGS-5275). Since the bulk of Layer C did not contain cultural material, this charcoal appears to date the earliest use of this locality. Along with the presence of ceramics in both of the layers bearing cultural materials, it appears that this midden



deposit dates to the Initial period. Further, the sample tested was charcoal and may possibly have been old wood; thus, the date may be older than the locality where it was collected.

**DISCUSSION: UPACA**—The three profiles and three test pits excavated at Upaca yielded a broad range of chronological data. Radiocarbon samples yielded dates that confirmed a significant Late Archaic occupation in Sector A, including the main mound and associated circular plaza, with dates ranging from approximately 2700 to 2200 Cal B.C. (Table 4). A second area, Sector C, with a smaller mound and sunken circular plaza, appears to be structurally similar to the mound complex in Sector A and may also date to the Late Archaic. This sector remains to be tested.

All the radiocarbon samples collected from profiles were annual plant fiber, and most of those came from shicra bags. In the test units, however, only charcoal samples were recovered. The charcoal could be affected by the old wood problem to yield dates skewed earlier than those recorded from annual plants. However, dated charcoal samples appear to come from contexts that fall during the Initial period or later. Whether or not the dates are absolutely accurate, they do not date to the Late Archaic period, and they do not affect our interpretation of the Late Archaic dates collected at Upaca thus far.

Six of the eight dated samples from Sector A come from shicra bags. One sample of plant fiber was taken from *in situ* wall plaster on the Sector A mound, and one sample included plant fiber from under a hearth. Two of the dates from Profile 1 are earlier than those from more deeply buried contexts (2740 Cal B.C. and 2650 Cal B.C.), suggesting that while there may be buried strata of this age, the dates obtained are not from *in situ* material. Of the remaining two dates from Profile 1, the destroyed platform appears to be slightly earlier than the main mound dated from Profile 2. The low mound may have been built earlier than the taller structure flanking it, and at this point it is the earliest securely dated *in situ* context at Upaca. Dates overlap between mounds at 2330–2310 Cal B.C., suggesting that both the main mound and the lower platform had been built by that date. Fiber in the mound plaster dates to 2270 Cal B.C., possibly the last plastering of this part of the main mound, though the latest date from a shicra bag higher on the main mound is 2190 Cal B.C. (Table 4). Therefore, the last Late Archaic use of the

mounds in Sector A may have come as early as 2190 Cal B.C. While the range of occupation appears to extend from at least 2740–2190 Cal B.C., the areas tested were from the latter part of the occupation when the mounds in Sector A were in their final form, 2330–2190.

Both the Sector B mound and the test units yielded date more than 1,000 years later. In Sector B, shicra bag fragments yielded dates of 1110–870 Cal B.C., as did a small sample of plant materials that appeared in the corner of a plastered room floor in Mound B. The presence of ceramics in Profile 3, Sector B, and in the test pits in Sectors D and E further indicates that these structures postdate the third millennium B.C. At some sites, intrusive features disturbed Late Archaic features, but this does not appear to be the case in Sectors B, D, and E.

The Late Archaic occupation at Upaca is likely to have covered an area greater than Sector A. There may be Late Archaic deposits in Sector C, for example, where the small mound and sunken circular plaza appear to be a similar if smaller version of Sector A, though this sector remains to be tested. In addition, residential construction probably extended over a portion of the site. The later structures in Sector B and the test excavations in Sectors D and E did not reveal Late Archaic levels below those bearing ceramics. Thus, additional testing would be necessary to define the dimensions of Late Archaic habitation at Upaca.

The radiocarbon dates, though few in number for the size of the site, suggest an extensive occupation during the Late Archaic period, when the Sector A mound and circular plaza were constructed, and a smaller occupation (Sector B mound) during the Initial period. During the Early Horizon, the extensive area of pits was created, though their function is still not clear. Upaca's long occupation may have been discontinuous, but there was consistent use of the site over at least 2,500 years.

### **Punta y Suela (02PVGS-02)**

Punta y Suela is located on the right margin of the Pativilca River, 8 km from the coast and 4.5 km east of the town of Pativilca. Covering approximately 100 hectares, the site is a complex with four large mounds, six secondary mounds or low platforms, and an extensive residential



area. Four sectors have been delineated within the site (Fig. 12). Sector A includes the principal mound and the associated sunken circular plaza. Sector B is comprised of five smaller mounds located north of Sector A, one of which also has an associated sunken circular plaza. Sector C is located to the east of Sector A and includes another mound smaller than that in Sector A but larger than the mounds in Sector B. Sector D is an extensive area on the northern part of the site where there are numerous lithic flakes and mollusk shells on the surface.

Punta y Suela is situated at the southeast foot of the Pativilca Hills (Instituto Geografico Nacional sheet 22h). Comparison of historic air photos with the present landscape show that one of the two circular plazas has been completely destroyed by cultivators, and only a small corner of the other now remains after recent roadwork. The part of the site that includes the principal mounds, Sectors A and B, is now surrounded by fields that have come under cultivation since 1970, and an irrigation canal now circles most of the base of the principal mound in Sector A. The area immediately west of the main mound has recently been damaged by heavy equipment with the result that many structures have been completely destroyed (Fig. 13A, B).

Some areas at a distance from the central precinct have survived, while others have also suffered serious damage. In the extensive residential areas, the excavation of several canals has destroyed architecture. The occupants of the land around the site have also excavated a variety of holes and pits to extract sand or to search for artifacts.

Destruction is the result of several factors, the expansion of agricultural fields, roadwork, and the construction of electric power transmission towers. Today, cultivated fields cover the sectors of Punta y Suela with mound construction. Previously, this was *eriazó*, land that is neither irrigated nor cultivated. A large part of the residential portion of the site is still *eriazó*, but an irrigation canal is under construction that appears to be intended to convert much of the remaining dry area of Punta y Suela into agricultural fields.

At Punta y Suela, field crews cleared one profile 3 m wide in Sector C and three 1 × 2-m test units in Sector D. Eleven radiocarbon samples from those collected have been processed and yielded dates (Table 5).

Profile 1 was cleared along one face of the trench that exposed the interior of the Sector C mound. A detailed drawing was made, and samples of organic remains were collected for radiocarbon dating.

Test Unit 1, or DN-1, was 1 × 2-m test unit placed in the northern portion of Sector D at Punta y Suela in an area that had a scatter of shell and chipped stone on the surface.

Test Unit 2, or DN-2, was placed in the northern portion of Sector D, where it was also possible that habitation associated with the site would have been located. There was some evidence of looting in this part of the site, though the materials discarded on the surface suggested these were later burials.

Test Unit 3, or DS-1, was excavated in the southern portion of Sector D. This 1 × 2-m unit was placed in an undisturbed area north of the Sector C mound. It was possible that the remains of habitation associated with the mounds would be identified and samples collected for radiocarbon dating.

SECTOR A—Located on the southeast portion of the site, this sector includes a large, raised platform mound surrounded by cultivated fields, principally cornfields, irrigated by modern canals. Construction material was primarily river cobbles at Punta y Suela, though some angular rock could be seen on the surface. The main mound measures 40 × 50 m and is approximately 12 m high. On the summit of the mound is a fallen monolith, or *hvanca*, and a series of structures that are roughly delineated by the bases of walls, though the form of the rooms is not clear.

The sunken circular plaza in Sector A is clearly visible in the 1970 SAN aerial photo. Today, however, the sunken circular plaza has been leveled, and the field is cultivated, though a patch of gravel can be seen in the field roughly in the location of the former circular plaza when the crops have been harvested and the field is clear. No excavations were carried out in this sector for lack of exposed areas to clear.

SECTOR B: SAMPLE COLLECTION—This sector is located 50 m north of the main mound in Sector A. Sector B includes three rectangular mounds, each with dimensions smaller than the principal mound. One mound's surface is covered with small and medium river cobbles. The largest of the mounds in Sector B, measuring 24 × 26 m × 4 m high, has been heavily damaged by efforts to level it to extend agricultural fields. Several other



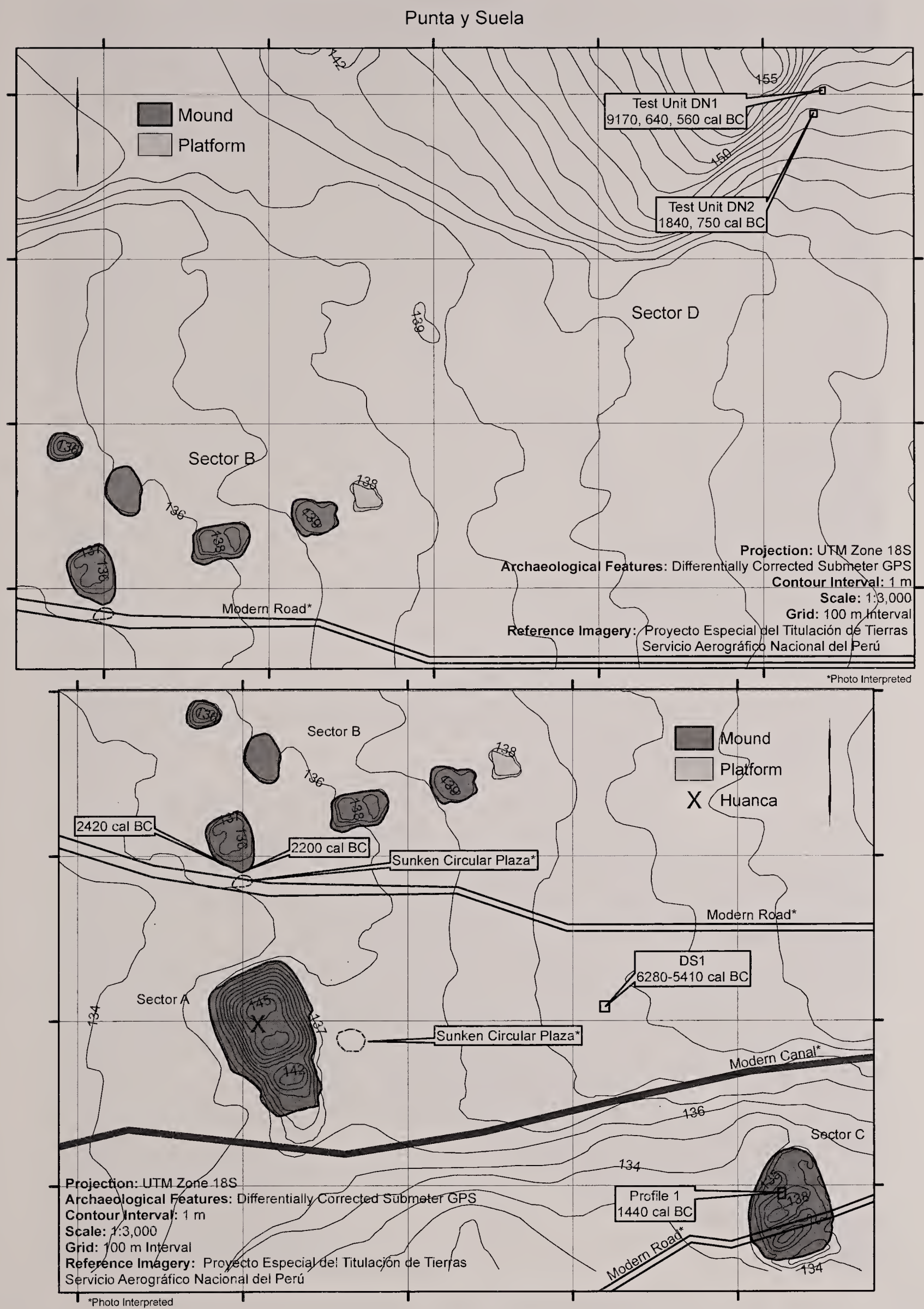


FIG. 12. Map of Punta y Suela showing mounds and other features, sectors, canals, roads, and encroaching structures.



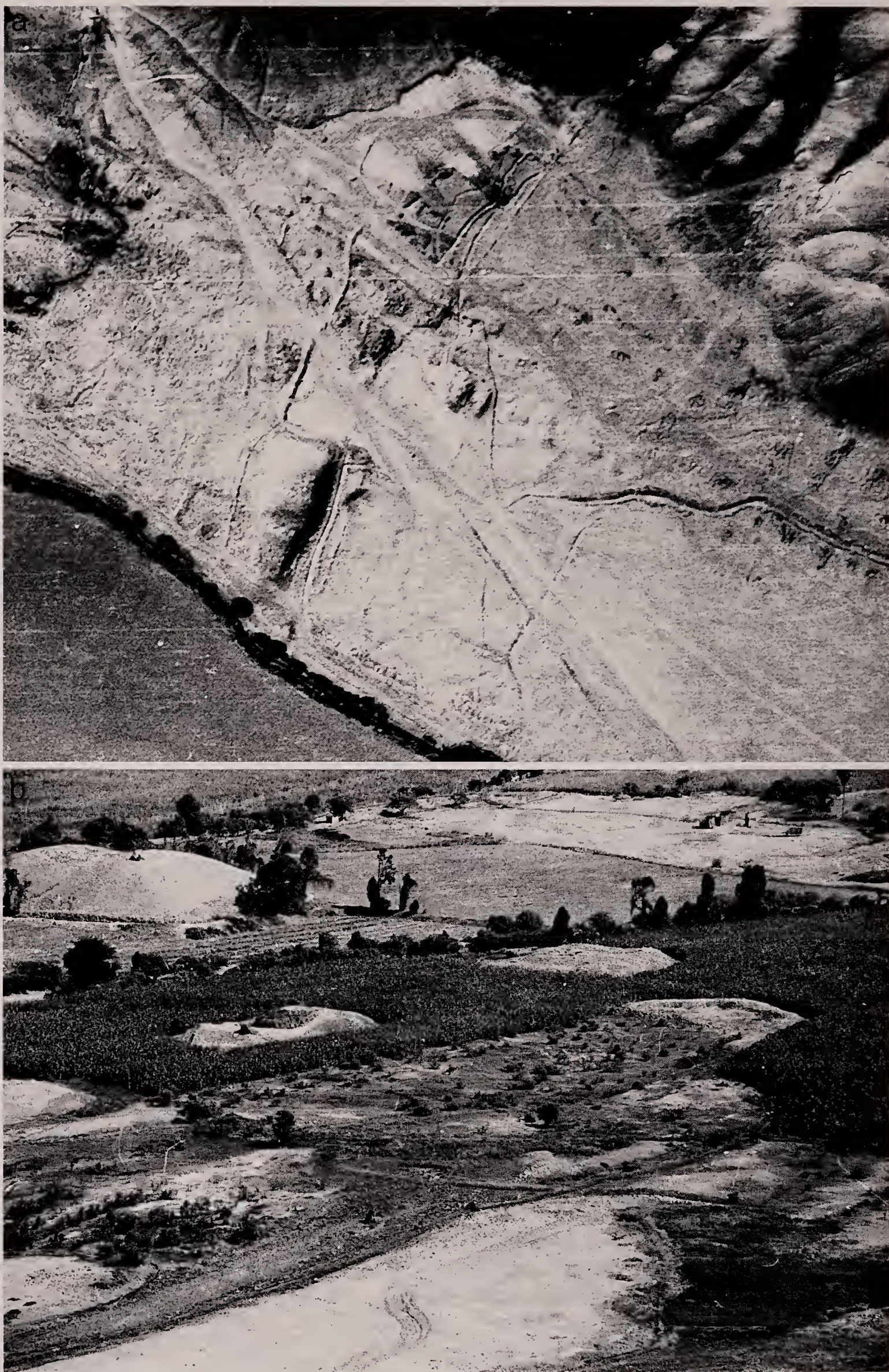


FIG. 13. (A) Aerial view of Punta y Suela in 1970 (SAN). (B) Photo of Punta y Suela in 2002 (J. Haas).



TABLE 5. Punta y Suela radiocarbon dates from samples obtained in 2002.

Provenience	Text and illustration location	Material	Lab no.	Cal. B.C.	RCYBP	$^{12}\text{C}/^{13}\text{C}$	Weight of sample (g)	Calibrated age range 1 sigma (68.3%) B.C.	Calibrated age range 2 sigma (95.4%) B.C.
Mound B S/D	A	Charcoal	ISGS-A-422	2200	3775 $\pm$ 35	-10.7	1	2278-2252 (23.7), 2230-2220 (8.4), 2207-2140 (68.1)	2303-2125 (91.4), 2095-2092 (.3), 2084-2041 (8.3)
Mound B S/D	B	Mixed plant fibers	ISGS-A-421	2420	3935 $\pm$ 35	-14.9	1	2472-2401 (73.8), 2379-2349 (26.2)	2558-2536 (4.6), 2495-2302 (95.4)
Mound C, Profile 1	PA	Wood	ISGS-5284	1480	3210 $\pm$ 70	-27.1	18	1599-1587 (5.6), 1581-1570 (4), 1529-1407 (90.4)	1682-1668 (1.3), 1661-1649 (.9), 1640-1370 (94.2), 1358-1350 (.5), 1342-1317 (3.1)
Sector D-N1, Test Pit 1	TA	Mixed plant fibers	Beta-177317	560	2430 $\pm$ 70	-25.8	5	758-684 (30.5), 660-644 (6), 586-584 (1.1), 544-404 (62.4)	765-396 (100.0)
Sector D-N1, Test Pit 1	TB	Charcoal	GX-30120	640	2550 $\pm$ 70	-26.1	12	803-756 (26.5), 699-540 (73.5)	823-483 (94.1), 466-448 (2.4), 442-413 (3.5)
Sector D-N1, Test Pit 1, Level 10	TC	Mixed plant fibers	ISGS-5393	9170	9750 $\pm$ 110	-22.8	15	9307-9117 (71.9), 8991-8907 (22.5), 8876-8857 (4), 8850-8843 (1.6)	9597-9560 (1.5), 9454-9441 (.5), 9392-8779 (97.2), 8770-8748 (.8)
Sector D-N2, Test Pit 2	TD	Mixed plant fibers	ISGS-5292	750	2600 $\pm$ 70	-26.2	18	833-759 (56.4), 683-663 (9.3), 640-588 (20.9), 581-545 (13.4)	903-516 (98.1), 462-451 (.8), 439-429 (.7), 421-414 (.4)
Sector D-N2, Test Pit 2	TE	Charcoal	ISGS-5272	1840	3520 $\pm$ 70	-25.2	15	1935-1934 (.9), 1921-1744 (99.1)	2032-1683 (99.7), 1667-1663 (.2), 1646-1644 (.1)
Sector D-S1, Test Pit 1,	TF	Charcoal	Beta-177318	5410	6440 $\pm$ 70	-23.8	18	5475-5361 (97.2), 5346-5344 (2.1), 5236-5325 (.7)	5540-5290 (100.0)
Sector D-S1, Test Pit 1	TG	Charcoal	GX-30119	5410	6450 $\pm$ 90	-25.7	18	5479-5338 (94.9), 5332-5322 (5.1)	5613-5586 (2.7), 5560-5259 (97), 5236-5235 (.1), 5217-5214 (.2)
Sector D-S1, Test Pit 1	TH	Charcoal	ISGS-5271	6280	7410 $\pm$ 70	-25.1	18	6383-6218 (100.0)	6415-6197 (82.5), 6194-6159 (7.2), 61396089 (10.4)





FIG. 14. Photo of power pole set in Mound C, Punta y Suela (J. Haas).

Sector B mounds visible in the aerial photos are no longer visible. These smaller mounds have been either completely demolished or plowed down around the margins.

The remains of a sunken circular plaza approximately 15 m in diameter can be seen along the south side of the largest mound in Sector B, though little remains after roadwork and expansion of the cultivated fields over the site. Two samples of charcoal were recovered from a profile exposed along the road through this sector. One sample of plant fibers was AMS dated to 2420 Cal B.C. (ISGS-A421) (Table 5). The second sample was charcoal AMS dated at 2200 Cal B.C. (ISGS-422). No other eroded or exposed areas were identified that appeared likely to yield samples for radiocarbon dating, and no excavation was undertaken in this sector.

**SECTOR C: PROFILE 1**—This sector is located 400 m southeast of Sector A. It includes a large mound  $37 \times 74$  m at the base and 6 m high. The surface of the mound is covered with river cobbles. The mound in Sector C was cut in half when a power line was constructed and the central portion of the mound was removed by

heavy machinery in order to increase the distance between the power lines and the ground once the power pole had been installed (Fig. 14). Sector C was further damaged by heavy machinery during widening of a jeep trail that runs between the mound and an irrigation canal. Two profiles were exposed by the work of heavy machinery. One of these profiles was cleared and recorded. This profile offered an opportunity to determine the construction methods of a mound from top to bottom without conducting a large-scale excavation. Carbon samples were collected from the material exposed in the profiled cuts, designated Profile 1.

Profile 1 is located in the southern part of the cut made by heavy machinery in the center of the mound. A swath through the mound was removed, cut in a way that created a profile having three tiered levels, which indicate the movements of the bulldozer. PANC team members cleared an area  $3 \times 7$  m.

Construction fill included river cobbles, a small number of angular stones, clay, and some loose sediment. The construction did not incorporate shicra bags but employed a simpler method,



**PANC-2002**

Punta y Suela, Sector C

Profile 1

East Face

100 cm

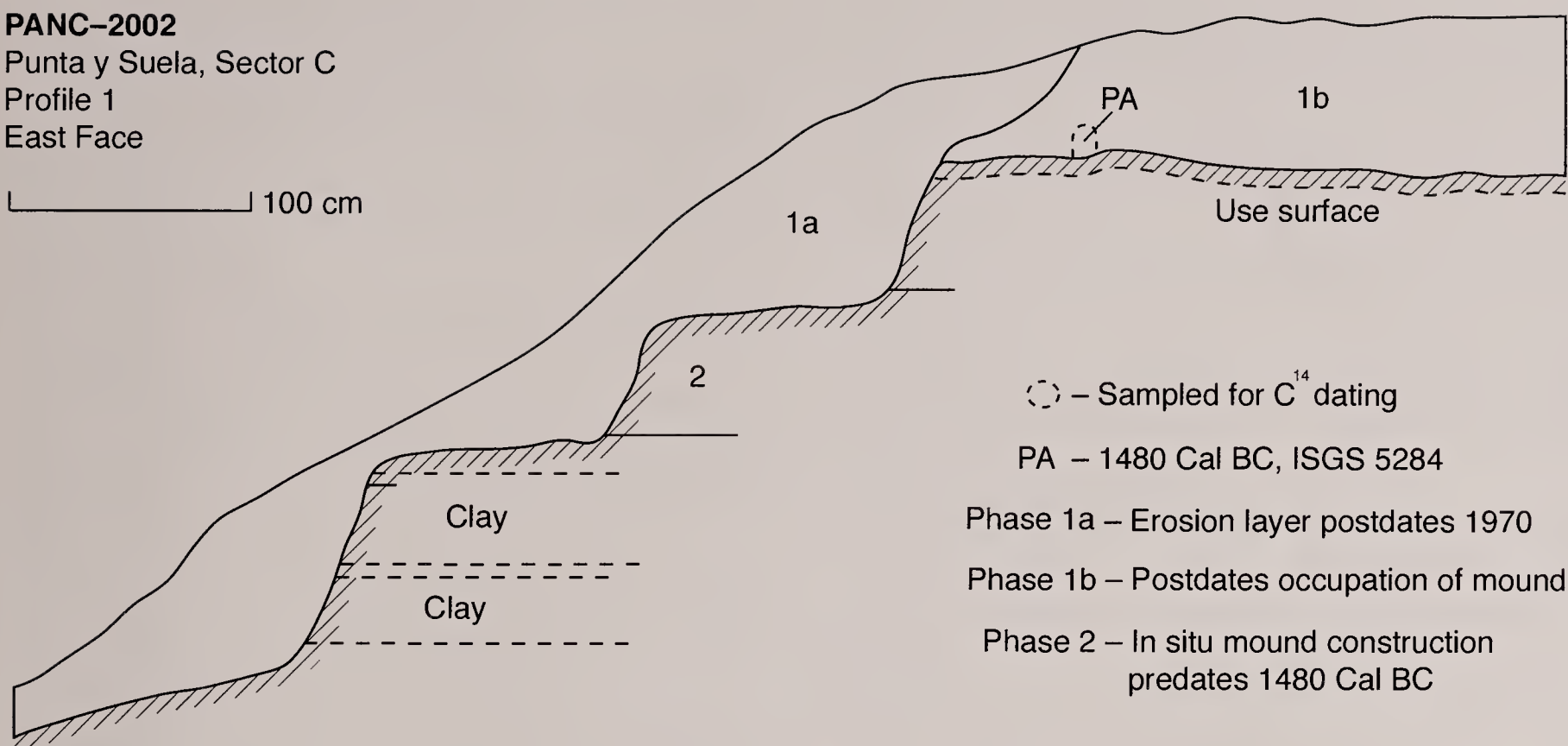


FIG. 15. Punta y Suela, Sector C, Profile 1.

stacking rock and adding in earth and wet clay mixed with a little bit of trash.

Fill from clearing Profile 1 included numerous river cobbles, a small amount of pottery, mollusk shells, botanical remains (gourd fragments, charcoal, seeds, and stems), possible lithics, and a few animal bone fragments.

The profile was cleared carefully, revealing several levels of material (Fig. 15).

1. The upper part of the fill revealed an irregular surface about 5 cm thick. This surface was distinguished by the very slight compacting of the material.
2. Fill covering the summit of the mound included fine loose sediment and some cobbles. The entire layer represents modern disturbance.
3. This was a layer of material produced by modern disturbance along the slope of the mound, including small lumps of clayey earth in fine sediment along with some cobbles.
4. An intrusion located in the center part of the cleared area proved to have been cut by heavy machinery. However, the fill below the floor surface, composed of river cobbles, was exposed in this area. A segment of tree trunk was recovered from a posthole within the intrusion. A fragment of this post was dated to 1480 Cal B.C. (ISGS-5284).
5. A small concentration of reddened sediment (20 × 25 cm in area) was visible in the center of the cleared area.

6. A level area proved to be formed by heavy machinery and was neither a use surface, a floor, nor a terrace.
7. A second level area also proved to be formed by heavy machinery.
8. In the lowest area cleared in Sector C, removal of sediment revealed two layers of clay. The lower edge of the cleared area was the result of earthmoving machinery and not a use surface, floor, or terrace.

Analysis of this heavily disturbed profile identified two phases, one of which postdates occupation of Sector C at Punta y Suela.

Phase 1a included loose fill, small lumps of sediment and river cobbles that have fallen or eroded along the slope of the bulldozer cut. Contemporary trash in this area suggests that this is relatively recent erosion of the slope following earthmoving and placement of power poles on the mound. Phase 1b represents a slightly earlier deposit that was still disturbed by construction and dates to the recent past. This deposit includes fine textured wind-deposited sediment and river cobbles on the upper surface of the profile.

Phase 2 includes the undisturbed remains of the mound. No individual walls or floors could be distinguished while clearing the profile. While it would take further investigation to determine the details of mound construction, at least a portion of the Sector C mound is still undisturbed.



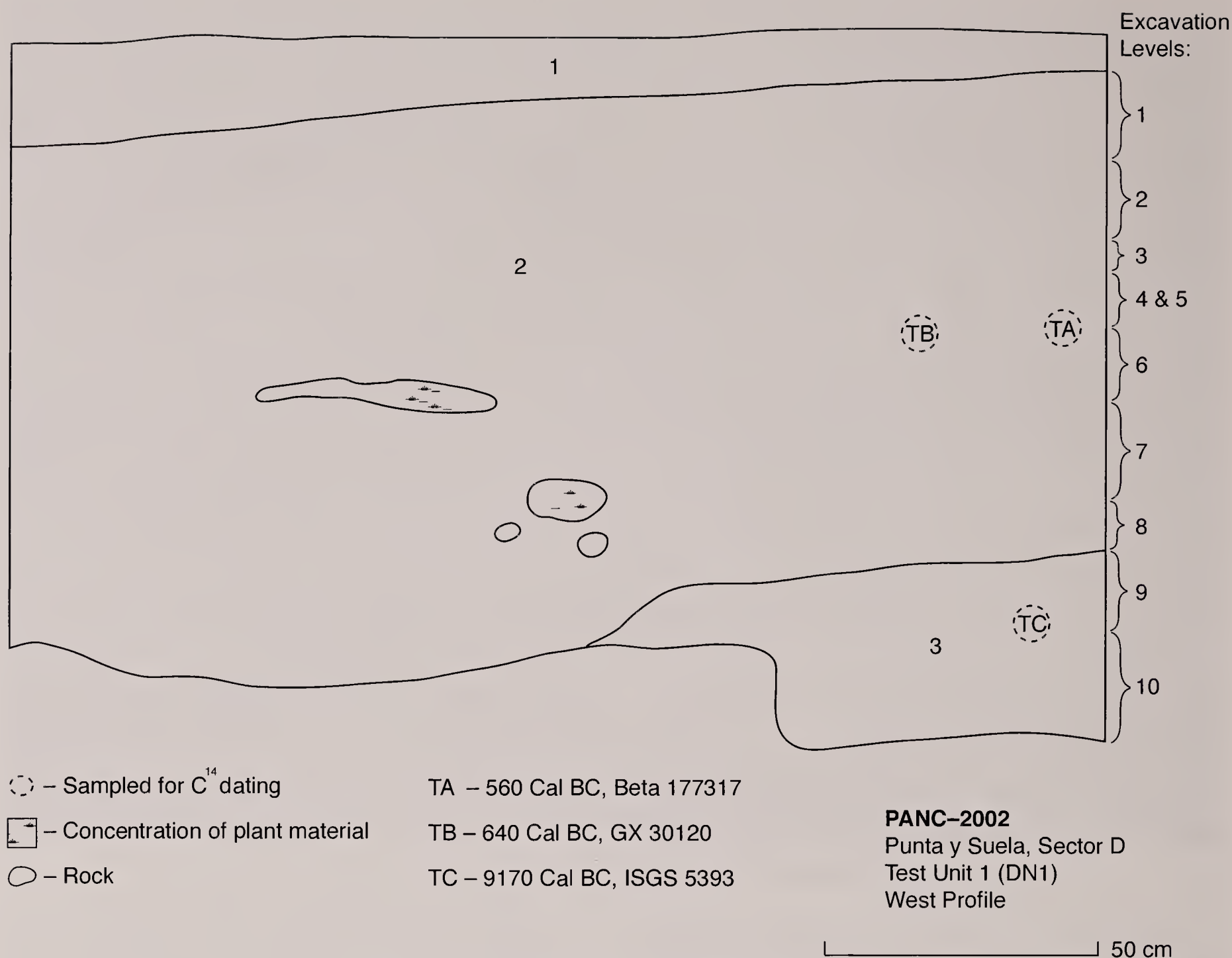


FIG. 16. Punta y Suela, Sector D, Test Unit 1 (DN1).

**Conclusions**—The Sector C mound at Punta y Suela may be a solid construction of river cobbles and clay. If shicra was used in construction of the mound, it lies more deeply buried or is present in better-preserved parts of the mound. As a result, only a sample of the post in the upper surface of the mound was dated. The date obtained, 1480 Cal B.C. (ISGS-5284), falls long after the Late Archaic period of occupation at Punta y Suela, and, in addition, the post itself could be older than context in which it was used, a result of the excellent conditions for preservation in the Norte Chico. The two levels of clay identified in the cleared area of Sector C suggest that there were multiple construction episodes. However, no shicra bags were found in this area, and the mix of cobbles and layers of clay could be part of the underlying construction. Only further excavation of the undisturbed portion of the Sector C mound will clarify our understanding of mound construction.

**SECTOR D: TEST UNITS 1, 2, AND 3**—Sector D includes an extensive area that appears to have been habitation. A large quantity of angular rock is visible on the surface along with remains of mollusks, dark sediment, and stone flakes, though no walls or other architectural remains are visible. This sector extends to the base of the hills and covers an area greater than 300×500 m. An exposed profile includes a layer of dense mollusk shells 60 cm thick.

In Sector D, three test units were excavated in areas that had been looted or where agricultural activities exposed trash deposits below the surface. These 1 × 2-m test units were excavated to sterile material. Carbon samples were recovered from plant fibers in each unit. These units were designated Test Unit 1 (DN1), Test Unit 2 (DN2), and Test Unit 3 (DS1).

**SECTOR D: TEST UNIT 1 (DN1)**—This 1 × 2-m test unit was located in the northern part of Sector D at Punta y Suela and was excavated in arbitrary levels 7–20 cm thick (Fig. 16). The



surface shell and stone suggested this might be an area of Late Archaic occupation.

Level 1 included gray sandy soil with gravel inclusions and more cultural material than was visible on the surface, including nondiagnostic ceramics, lithics, and plant remains in addition to shell fragments.

Level 2 continued with remains suggesting trash deposition similar to Level 1.

Level 3 included loose, gravelly soil that contained some shell fragments and ceramic fragments. No charcoal or plant material was present in this level.

Level 4 was a layer of caliche, soil cemented together by salt. The top of this level was much harder than the previous levels, and breaking through the caliche layer and removing it established the base of this level. The material at the base of this level was darker and appeared to be a trash deposit.

Level 5 consisted of fine textured soil with a large quantity of angular rock. Cultural material in Level 5 included shell, charcoal, and some fish bones, and a few ceramic fragments appear to be midden fill. Level 5 is at the same level as Level 4 but is a separately excavated area.

Level 6 was composed of fine soil mixed with small angular rock. The matrix in this level was loose and uncompacted. Midden contents continued to be recovered in this level, including plant fiber, charcoal, and a small quantity of maize. One sample of annual plant remains recovered from this level was dated 560 Cal B.C. (Beta 177317) (Fig. 16, TA), while a sample of charcoal fragments from the same level dated to 640 Cal B.C. (GX 30120) (Fig. 16, TB).

Level 7 continued the deposit of trash, including shell, charcoal, lithics, some ceramic fragments, and plant remains, including a small amount of maize.

Level 8 was also composed of loose fine soil mixed with angular rock and shell fragments. The quantity of midden decreased markedly, including less charcoal and plant material. One side of the unit was rocky, while the other was primarily fine soil.

Level 9 was the final level initiated in this unit. Cultural material recovered in this level included lithics, shell, plant material, and one potsherd.

Level 10 includes only one sample collected for radiocarbon dating from the upper surface of this level in the northeast corner of the unit and consisted of a twig that was radiocarbon dated to

9170 Cal B.C. (ISGS 5393). The remainder of the level was gravelly soil without any cultural material. This level was only excavated in the northwest end of the unit. Excavation was terminated when it no cultural remains were recovered.

Three depositional units were distinguished in Test Unit 1.

Phase 1 was a level of surface material that included gray sand and gravel deposited by wind and water. There was also a scatter of artifacts included in this level.

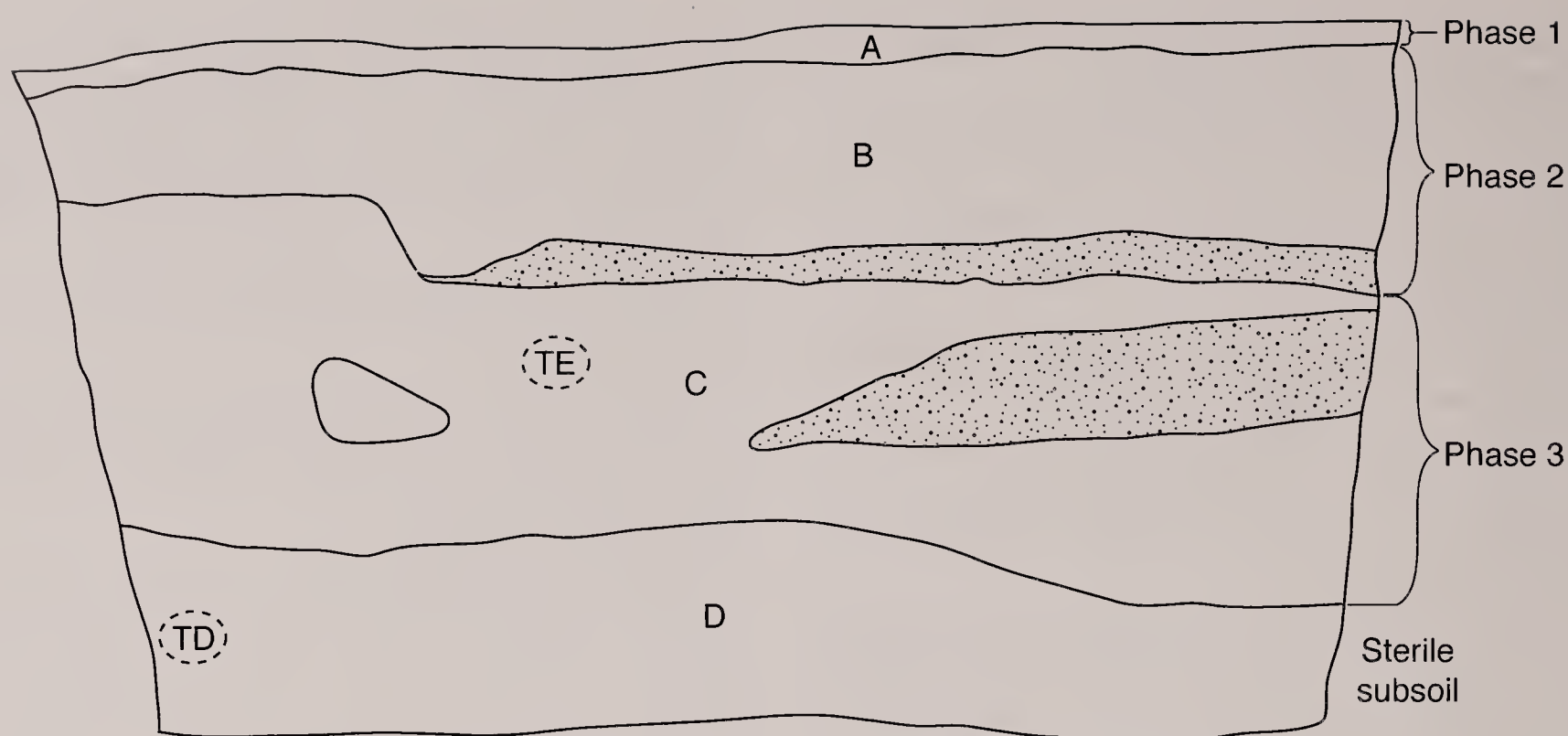
Phase 2 included rocky fill with mollusks, botanical remains, lithics, charcoal, bone, and ceramics. Within Layer 2 were a small lens of botanical material and a separate pocket of similar material. These appeared to be deposited along with the other materials in the level rather than having been specific features.

Phase 3 included fine gray sandy sediment with no cultural material.

**Conclusions**—Test Unit 1 (DN-1) revealed the presence of a single level of deposition that appears to be domestic trash. No features were identified in this unit, supporting its being a midden. The three radiocarbon dates from this unit bracket the occupation of this area. Two samples date to the first millennium B.C. One sample of plant fiber yielded a date of 560 Cal B.C. (Beta 177317), while a charcoal sample from the same level yielded a date of 640 Cal B.C. (GX-30120). These may date the deposit, and they appear to come from undisturbed contexts, though the soil was not highly compacted. Nearby are the remains of looted burials, which seem to be intrusive into the rocky fill of Sector D. Thus, the radiocarbon dates appear to pre-date the burials. However, there could easily be burials from a broad span of dates in this area, although none have been excavated. The dates do not indicate there was use of this area during the Late Archaic period, and ceramics were present in every excavated level. The early sample from the base of the unit pre-dates the Late Archaic period and appears to pre-date any occupation of the site since it was a twig not associated with cultural material. The sample from Layer 3 may date an earlier land surface that was covered up by the action of wind and water.

**SECTOR D: TEST UNIT 2 (DN2)**—This 1 × 2-m unit was located in the north part of Sector D at Punta y Suela. The unit was placed adjacent to a looted burial. The profile of the looted area suggested there might be a layer of trash that





**PANC – 2002**

Punta y Suela, Sector D

Test Unit 2 (DN2)

West Profile

50 cm

○ – Sampled for C<sup>14</sup> dating

▨ – Sand and gravel

○ – Rock

TD – 750 Cal BC (ISGS 5292)

TE – 1840 Cal BC (ISGS 5272)

FIG. 17. Punta y Suela, Sector D, Test Unit 2 (DN2).

included botanical material below the surface (Fig. 17). This test unit was excavated in natural layers.

Layer A: Sandy silt with angular rock ranging from 0.5 to 7 cm. Shell fragments, two ceramic fragments, a textile fragment, and botanical remains were present, including a cluster of plant remains in the southeast corner.

Layer B: Fine sandy sediment with small angular rock approximately 5 cm in size. The entire layer was cemented together by caliche. A couple of small textile fragments were recovered from this level.

Layer C: Gravelly sediment including fine rock fragments less than 5 cm in size. The material is a brownish gray color with a very small number of shells and ceramic fragments. A river cobble with a ground area on one side was recovered from this layer. A lens of sand and gravelly material was identified at the top of Layer C. Another area of sandy and gravelly material extended into Layer C but did not extend across the entire test unit.

Layer D: This proved to be entirely without artifacts. The layer of silty sand was the last excavated in this unit.

Three phases of deposition can be identified in this excavation.

Phase 1 postdates occupation of the site and includes fine wind-deposited sediment in Layer A. The small quantity of cultural material found in the surface level, one shell fragment and two ceramic fragments, probably does not represent primary deposition.

Phase 2 includes Layer B, including a gravelly lens and a pocket of botanical remains. This is also related to occupation of the site based on its cultural contents similar to the level below.

Phase 3 includes Layer C and the gravelly lens that extends into Layer C. This represents deposition of material during a period of site use, as indicated by the presence of cultural material in the level, including shell, sherds, lithics, and a bone fragment.

**Conclusions**—Two radiocarbon dates were obtained from samples in Test Unit 2 (DN2). One of these samples consisted of a fragment of woven mat from a burial that intruded into the southeast corner of the unit. The burial was present in the unexcavated area and was not removed, though a fragment of the mat that wrapped the burial was collected. The resulting



date of 750 Cal B.C. (ISGS-5292) indicates that the burial postdates the Late Archaic period. The presence of ceramics in this excavated unit in Layers B and C supports this view. Further, this date may indicate use of this area comparable to that in Test Unit 3 (DS-1), where dates are not dissimilar. Although from a deeper location, this burial was intrusive. Ceramics were found in all levels of this unit.

A second radiocarbon date from this unit was from a sample of charcoal collected from Layer C and associated with peanut shell (Fig. 17, TE). This sample yielded a date of 1840 Cal B.C. (ISGS-5272). This date may indicate there was a Late Archaic occupation present in this part of Sector D, below the ceramic layers. However, this would include only the lowest portion of Layer C.

**SECTOR D: TEST UNIT 3 (DS1)**—This pit is located in the southwest part of the site in Sector D, a possible residential area. This test unit was excavated in 10-cm levels.

1. (Surface): Loose, silty soil mixed with gray, medium-sized gravel. Cultural material included seeds, mollusks, charcoal, bone, ceramics, and botanical remains. A number of heat-fractured river cobbles were present as well.
2. Loose sediment with medium-sized gravel, along with numerous river cobbles. Some river cobbles were heat fractured. Charcoal, fish bone, otoliths, and ceramics (44 fragments) were present.
3. Loose sediment with medium-sized gravel and river cobbles. A large quantity of charcoal, very few ceramics, remains of burned bone, and a large number of heat-fractured rocks were present.
4. Fine sediment combined with gravel. Half the unit at this level still contained cultural material, including burned rock, shell, charcoal, bone, lithics, quartz, and ceramics. One sample of charcoal collected from this level was radiocarbon dated to 5410 Cal B.C. (Beta 177318).
5. This level was similar to Level 4, including the presence of burned river cobbles, shell, bone, charcoal, quartz, lithics, and one ceramic fragment. The south half of the unit was sterile gravelly fill. A charcoal sample from this level was dated to 5410 Cal B.C. (GX 30119).
6. The final level in this unit included very fine gray-yellow sediment with a small quantity

of bone, lithics shell, and a fragment of human cranium. The lower half of the level was gravelly and without any cultural material. A radiocarbon sample of charcoal from the upper portion of this level was dated to 6280 Cal B.C. (ISGS-5271).

There was a distinctively large quantity of heat-fractured rock and abundant organic material in Test Unit 3, which supports the area being a residential zone, though the presence of ceramics in all excavated levels indicates that this occupation postdated the Late Archaic period. Analysis of the profile identified five phases of occupation (Fig. 18).

Phase 1 included grayish clayey sediment with gravel and cultural material including ceramics. This phase appears to postdate occupation of the site. For example, a patch of charcoal visible on the surface did not continue into subsequent layers.

Phase 2 was the final period of trash deposition in this area. Patches of sediment with cobbles, shell, and fire-cracked rock alternate with patches of charcoal, suggesting continued deposition of materials, including hearth contents (charcoal), botanical remains, lithics, and bone. A narrow layer, 1.5–4 cm thick, of fine, soft, yellow-gold colored soil was deposited at the end of this phase over the trash deposit, though it does not cover the area completely.

Phase 3 included a period of time during which the area was used for deposition of burned cobbles and trash. Yellowish-gray fill in this layer included fragments of fire-reddened river cobbles, other lithics, and shell along the sloping surface of the cobbles below.

Phase 4 included a period during which a mound of cobbles, both unaltered and fire reddened, were deposited in the north end of the unit in a matrix of reddish-brown soil. A sample of charcoal from Level 4 dates this Phase to 5410 Cal B.C. (Beta 177318).

Phase 5 marked the initial use of this portion of Sector D. Material remains were sparse, though the variety suggests the start of a midden area. The yellowish-gray sediment is composed of large-grained sand from the southwest corner to the center of the unit. The two radiocarbon dates were obtained from the deposits of this phase—6280 Cal B.C. (ISGS-5271) and 5410 Cal B.C. (GX 30119)—suggesting a Middle Archaic date for this area, even when the fact that these



**PANC – 2002**  
Punta y Suela, Sector D  
Profile, Test Unit 3 (DS1)  
Facing West Wall  
50 cm

○ – Sampled for C<sup>14</sup> dating  
▨ – Powdery yellow-gold soil  
■ – Charcoal  
▤ – Reddish soil  
□ – Rock  
TF – 5410 Cal BC (Beta 177318)  
TG – 5410 Cal BC (GX-30119)  
TH – 6280 Cal BC (1SGS-5271)

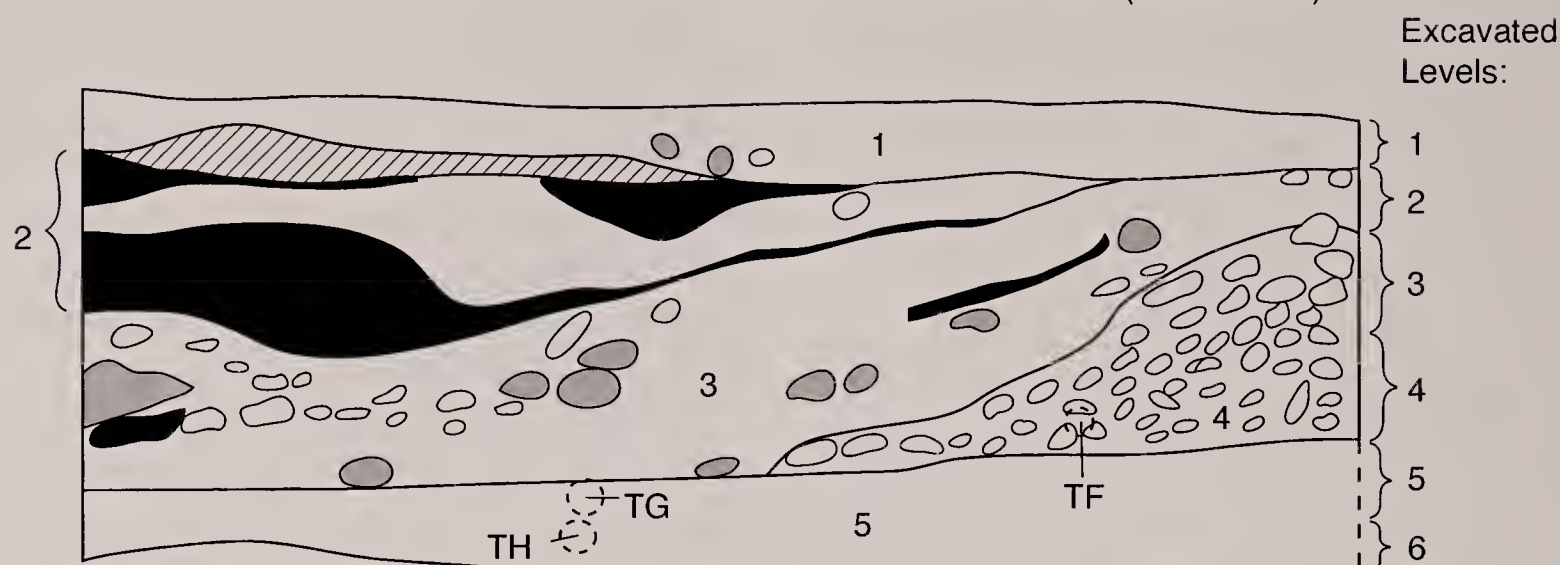


FIG. 18. Punta y Suela, Sector D, Test Unit 3 (DS1).

samples where charcoal is taken into consideration.

**Conclusions**—The radiocarbon dates from Test Unit 3 (DS-1) suggest that there may be an earlier occupation at Punta y Suela than has been identified at the other sites tested in the Pativilca Valley. Test units of 1 × 2 m are so small compared to the overall size of the sites tested that there could easily be other Middle Archaic occupations associated with Preceramic sites that were not identified during 2002. Since the early dates in Test Unit 3 come from charcoal samples, it would be necessary to expand the excavation in this area to see whether specific features like the mound of cobbles could be features associated with a Middle Archaic occupation. The preceramic deposits in Test Unit 3 appear to be associated with Phase 2, and, again, these would need to be confirmed by additional excavation.

**DISCUSSION: PUNTA Y SUELA**—The three test units, each 1 × 2 m in size, served to identify this portion of Sector D as a zone of residential and domestic uses, based on the large quantities of mollusk fragments, heat-fractured rock, and household trash. Radiocarbon dates suggest that this area was occupied over a very lengthy period, perhaps as early as the Middle Archaic:

- Four samples from Sector D, including Test Unit 1, Level 10, and Test Unit 3, Levels 4–6, date from 9170 to 5410 Cal B.C.

- Three samples date to the Late Archaic period, including two from Sector B and one from Sector D, Test Unit 2, Capa C. Together, these span the period 2420–1840 Cal B.C.
- A single sample from the upper surface of the Sector C mound dates to 1480 Cal B.C., the Initial period.
- Three samples, one from outside Sector D, Test Unit 2, associated with a burial and two from Sector D, Test Unit 1, Level 6, date to 560–750 A.D., the Early Intermediate period.

The radiocarbon dates from Punta y Suela suggest there may have been a Middle Archaic occupation in the area of Test Unit 3 (DS-1). The early dates come from the lower levels (4–6) of a test unit where ceramics were also recovered in Levels 4 and 5. In this part of Sector D, there is no evidence of Late Archaic occupation despite the relative proximity of the mounds in Sectors C and A.

Late Archaic dates were obtained from mounds in Sector B from the lowest layer of Sector D, Test Unit 2. However, the now-destroyed circular plaza and the mounds in Sector A suggest that there was a substantial Late Archaic occupation at Punta y Suela. The mound in Sector C also appears likely to be Late Archaic in date since an Initial period date was obtained from the uppermost level of the mound identified in clearing a damaged area.



The date of 1840 Cal B.C. from Sector D, Test Unit 2, suggests that there may be Late Archaic residential occupation in Sector D. Although residential structures were not identified in the 1 × 2-m test units, trash associated with residential activities was recovered in these units, suggesting that it may be possible to locate residential structures in Sector D with additional testing.

The Initial period date of 1480 Cal B.C. from Sector C is not accompanied by diagnostic ceramics or other data that would allow us to discuss possible Initial period use of the site. Later occupation, as indicated by Early Intermediate period dates from the test units in Sector D, appear to be associated with intrusive burials but possibly also with trash deposition in this area.

It is more likely that Punta y Suela was used as a burial site than as a habitation site during the Early Intermediate period. In 2002, no structures with evidence of occupation after the Late Archaic were identified. In the Norte Chico, there is a precedent for Late Archaic sites to be used as burial sites in subsequent times, and the use of Punta y Suela as a burial site seems the most likely possibility. Despite being heavily damaged in some areas by a jeep trail and the development of agricultural fields on the site, there are still substantial architectural and midden remains at Punta y Suela that can be profitably studied with further excavations.

### **Pampa San José (O2PVGS-3)**

Pampa San José is located on the right bank of the Pativilca River, 500 m southwest of the hamlet of the same name, at the base of the western slope of Cerro Mirador. This large and important site has suffered a great deal of damage. The mounds at Pampa San José are completely surrounded by agricultural fields. It is unlikely that remains of residential structures and their associated trash have been preserved. All that remains in this locality are a series of mounds and a sunken circular plaza. The circular plaza itself is being used as a reservoir and is filled with water most of the time.

Although the circular plaza at Pampa San José has been heavily damaged by the expansion of agricultural fields, the mounds are in a good state of preservation. The mounds are part of an architectural complex oriented toward the southeast (Fig. 19). In addition to the large platform mound with an associated sunken circular plaza,

two smaller platform mounds are located northeast of the main mound, while five subsidiary structures are situated southwest of the main mound. Directly across from the main mound is a low mound, now largely destroyed, that seems to have been constructed in the center of the U-shaped site layout.

Sector A includes the large rectangular platform mound and associated sunken circular plaza. The main mound measures 73 × 101 m and is 20 m high. The circular plaza is 39.6 m in diameter. Construction material included river cobbles but also some angular rock. On the summit of the main platform mound, a large, central atrium feature can be observed that included low walls on three sides of this open space. Remnants of a broad staircase descending to the foot of the mound on the open side of the atrium are visible.

Sector B at Pampa San José includes a rectangular platform mound located to the east of the main mound. Construction employed river cobbles. Lithic and shell materials can be seen all over the area of the mound, though no ceramics were visible. This mound is 38 × 42 m and 7 m high, and agricultural fields surround the entire structure.

Like the other sectors, Sector C at Pampa San José includes a rectangular platform mound, in this case located to the east of Sector B and also oriented to the southeast. The mound is 35 × 40 m, constructed of river cobbles, with no ceramics visible on the surface.

Although this site was mentioned by Williams (1985) and suggested to date to the Initial period, the architecture and the surface material at Pampa San José suggest occupation during the Late Archaic period.

Work by PANC during 2002 at Pampa San José was limited to clearing the exposed walls of a large hole that was excavated into the top of the principal mound in Sector A by looters. Numerous structures and floors are visible in the walls of this hole and provided valuable information about the construction techniques and the occupation sequence of the mound. Abundant plant material exposed in the profiles permitted us to obtain radiocarbon dates for different construction phases.

SECTOR A: PROFILE 1—A large looter's pit was excavated in the summit of the mound. It measures 5 × 5 m and is more than 4.3 m deep (Fig. 20). The hole is on the southeast side of the atrium. In the sides of this pit, construction



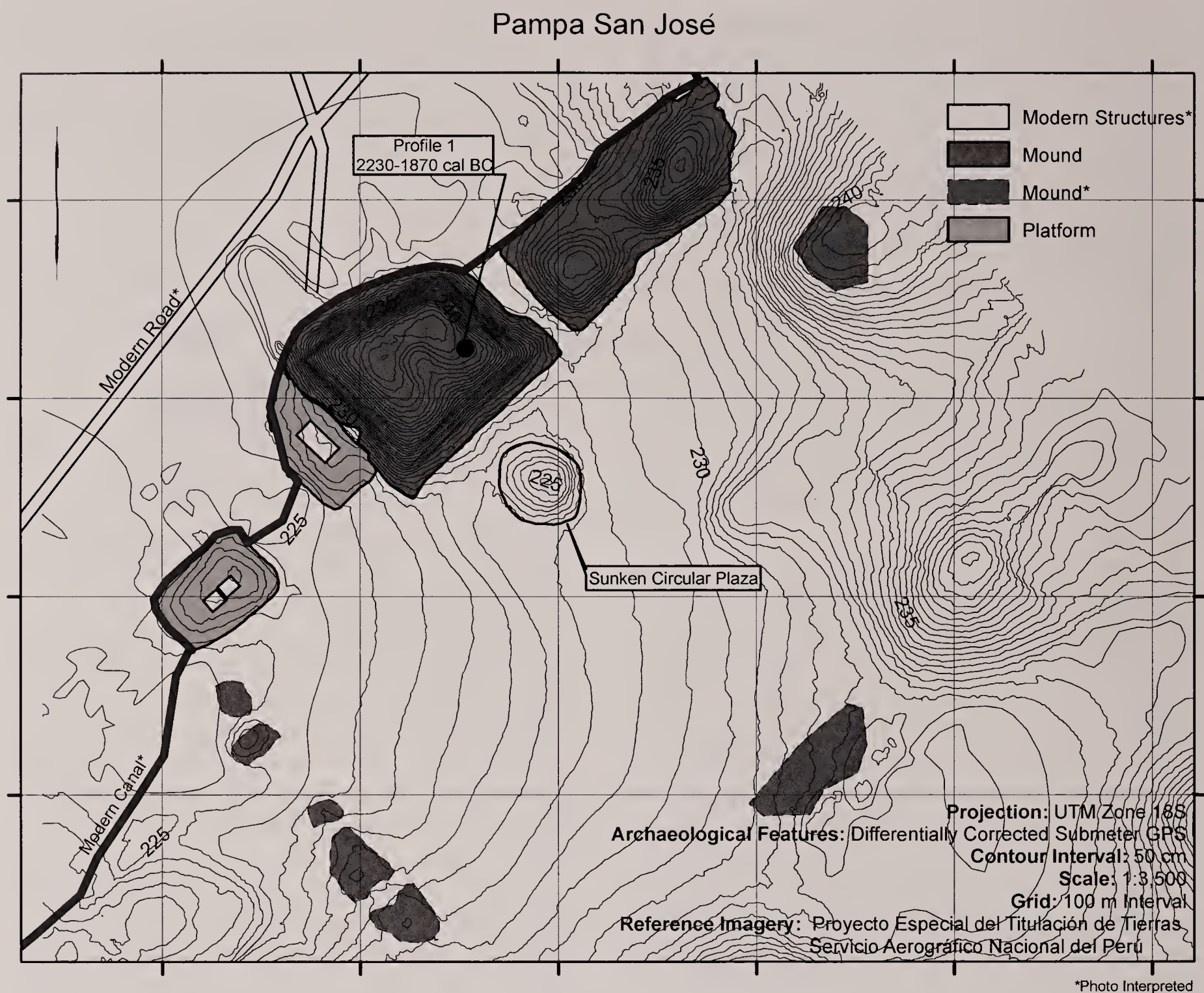


FIG. 19. Map of Pampa San José showing mounds and other features, sectors, canals, roads, and encroaching structures.

employing a variety of different materials is visible, including different types of shicra bags and large river cobbles. On the site surface, remains of mollusks, lithic materials, and organic remains, including fragments of shicra, can be seen. The hole has a nearly rectangular form that provided four profiles. These were recorded and carbon samples collected.

For the purposes of description, the walls of this unit were recorded separately (south, north, west, east). A letter indicating the face that was being recorded makes it possible to identify similarities and differences among the profiles (Fig. 21A).

**South Profile**—SA: Disturbed area, no stratigraphy visible.

SB: Fill of clay and stone.

SC: Multiple thin layers of clay, apparently representing numerous replasterings of a floor.

SD: Fill of loose clay, gravel, and sand between floors.

SE: Clay floor 3 cm thick.

SF: Fill of rock and sand under the floor.

SG: Area of sand, gravel fill, and small river cobbles.

SH: Wall of clay and river cobbles associated with Floor SL.

SI: Fill of large river cobbles and angular sandstone and quartzite chunks.

SJ: Clay floor cut by the excavation associated with SI.

SK: Fill of clay mortar and river cobbles between Floors SJ and SL.

SL: Clay floor associated with Wall SH.

SM: Trash fill between Layers SL and SN. Four carbon 14 samples were taken from this level. One of these, Sample 4, was processed, yielding a date of 2100 Cal B.C. (Table 6).





FIG. 20. Clearing the profile of the deep looter's hole in Pampa San José, 2002 (J. Haas).

SN: Floor at the base of the layer of trash fill SM.

SO: Sandy fill with shicra bags, from which a carbon 14 sample was obtained.

**North Profile**—NA: Wall 70 cm thick composed of river cobbles set in clay mortar.

NB: Fill of sand and gravel beside Wall NC.

NC: Wall of stone and mortar.

ND: Deposit of rocks of various sizes and some shicra.

NE: Small deposit of sand, gravel, and fiber located on top of a collapsed roof and fallen material NF.

NF: Collapsed roof material of interlaced canes. Radiocarbon samples 5 and 6 come from this roof material. Sample 5 yielded a date of 1950 Cal B.C.

NG: Fill from above Floor NG associated with wall ED. This fill consists of a mix of shicra bags filled with sand and gravel and others filled with rock. Carbon sample 8 comes from this level.

NH: A section of clay-plastered surface that may be a floor between Layers NG and NI.

NI: A layer of fill composed of carbon sample 9 comes from this level, dated to 2100 Cal B.C.

NJ: Remnants wall fall from higher walls.

NK: Lenses of sand and gravel. NL: Floor associated with Wall NC.

NM: Fill of loose river cobbles and clay, which may be associated with ND.

**West Profile**—WA: Fill river cobbles in clay mortar, possibly a collapsed wall. No structures, floor, or features.

WB: Laminated layers of clay adhering to the plaster on Wall NA. These probably represent numerous replasterings. The top of this layer was a floor, though it is impossible to determine how many remodelings of this floor there may be included in this layer.

WC: Layer of fill with river cobbles, sediment, and some shicra bags. Carbon sample 1 was obtained from this provenience.

WD: Loose sand and gravelly fill in the lower part of the north side are remains of shicra bags used to contain and to carry the sand. Carbon sample 2 comes from this layer.

WE: A layer of loose river cobbles and gray clay extending beneath the base of wall NA.

WF: This is a layer of shicra bags filled with sand, delineated by bags visible in the profile. The base of this layer is not fully exposed in the looter's pit.

WG: Wall of river cobbles in clay mortar. No plaster finish is visible on this side. The wall may be a retention wall, part of mound construction.

WH: Fill of loose sediment and river cobbles, which may be disturbed.

WI: Dense deposit of clay layers, without any visible floors.

WI2: Narrow layer of loose river cobbles.

WJ: Second retention wall built of river cobbles and clay mortar, without plaster-finished sides.

**East Profile**—EA: Fill of loose river cobbles, sediment and gravel.

EB: Loose fill, including some shicra bags placed behind the wall (to the east of the wall). The fill is a light orange color, and the base of this layer lies on SJ. Carbon sample 10 was collected from the northern edge of this layer.

EC: Compacted river cobbles and clay mortar.

ED: Small deposit of loose gravel and small river cobbles.

EE: Floor of river cobbles and clay connecting with SL.



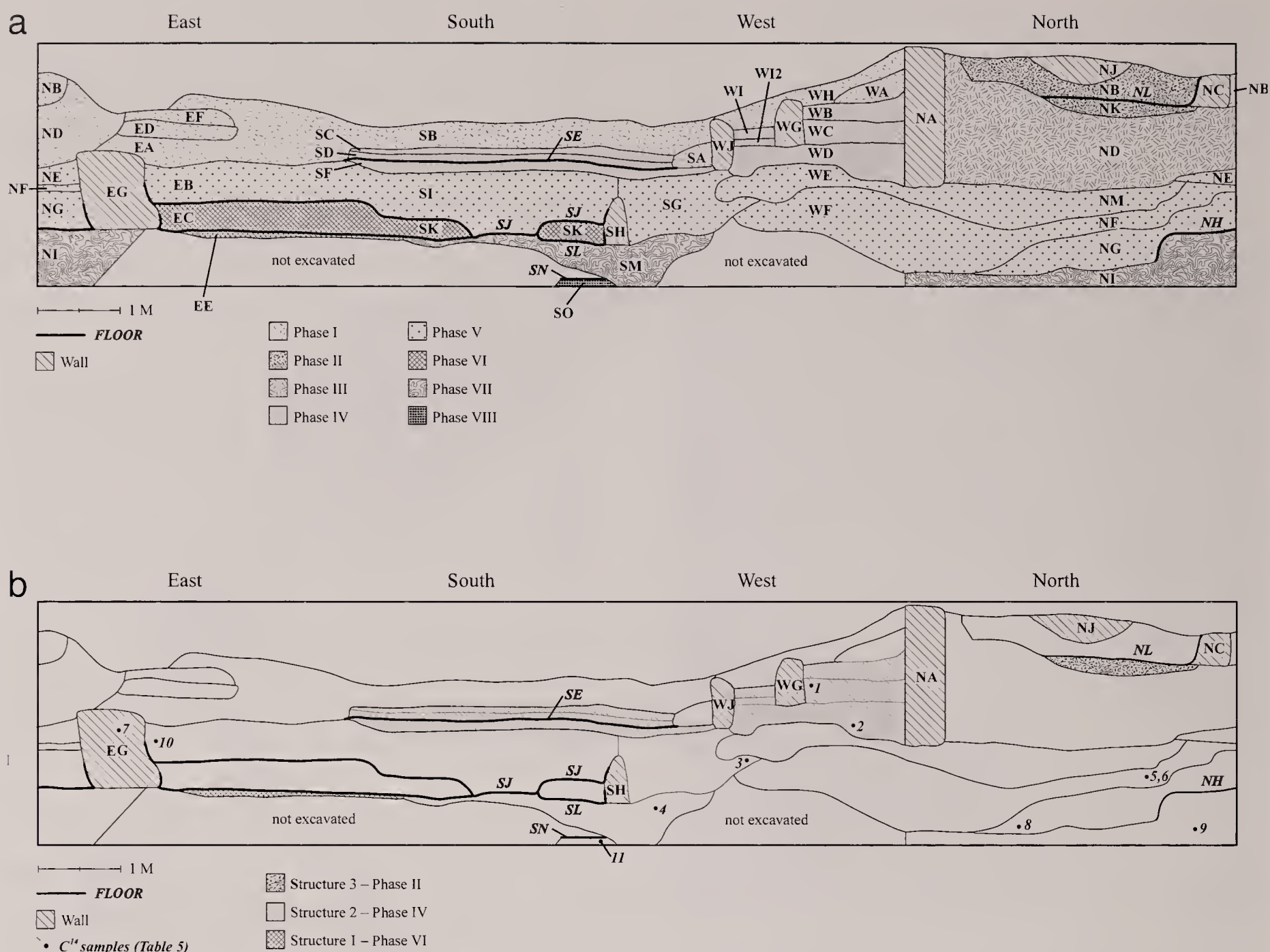


FIG. 21. (A) Pampa San José profile. (B) Pampa San José profile schematic of construction and dates.

EF: Small deposit of clay and sand without any visible floor.

EG: Wall of river cobbles in clay mortar that runs north to south crossing the entire looter's hole, though heavily damaged. Carbon sample 7 was collected from this layer.

The base of the profile at Pampa San José did not extend to sterile subsoil. A number of different occupation phases can be detected, though these do not extend to the base of the structure.

Phase I includes postoccupational deposition after use of the structures visible in this unit ceased, including NB, ND, SB, EA, ED, and EF. NB, for example, includes fill of sand and gravel on both sides of Wall NC, and no further use of the room is visible.

On the surface, not visible in profile, was a remnant of wall 70 cm wide. Only the broad base of the wall was exposed on the surface of the mound. The wall was built of cobbles in clay mortar and may be ancient or modern.

Phase II includes the period of use of Structure 3, a room formed of an older wall, NA, with new Walls NC and NJ and a floor (NL) inside the structure. The deposition of NK to level Floor NL is included in this phase.

Phase IIIa includes leveling that took place before construction of Structure 3. This appears to be a single episode of deposition, ND, including shicra bags in a layer of fill that leveled this area.

Phase IIIb material deposited after abandonment of Structure 2. This layer of windblown material, cobbles, and sediment is probably the result of the collapse of nearby walls and the spreading effects of the wind. Phase IIIb includes deposits NE, EA, SB and WH.

EF and ED are included in Phase IIIb since they are surrounded by EA and because the Phase II deposit ND appears to cut into these deposits. WA is also included here, though it is a layer of disturbed material that pre-dates Phase IIIb but postdates Phase IV.



TABLE 6. Pampa San José radiocarbon dates from samples obtained in 2002.

Provenience	Text and illustration location	Material	Lab no.	Cal. B.C.	RCYBP	<sup>12</sup> C/ <sup>13</sup> C	Weight of sample (g)	Calibrated age range 1 sigma (68.3%) B.C.	Calibrated age range 2 sigma (95.4%) B.C.
Mound A looter's pit	2, WD	Mixed plant fibers	Beta-177314	1870	3540 ± 70	-14.9	15	1949-1767 (96.7), 1759-1752 (3.3)	2114-2099 (1.1), 2034-1688 (98.8)
Mound A looter's pit	1, WC	Mixed plant fibers	GX-30125	1950	3600 ± 40	-22.7	15	2014-1998 (15.4), 1979-1890 (84.6)	2125-2096 (3.3), 2090-2084 (.4), 2040-1877 (91.5), 1841-1825 (2.9), 1819-1815 (.3), 1796-1780 (1.6)
Mound A looter's pit	5, NF	Mixed plant fibers	Beta-177315	1950	3600 ± 60	-25.4	15	2033-1880 (97), 1838-1831 (3)	2137-2076 (10.5), 2071-1858 (76.9), 1845-1770 (12.6)
Mound A looter's pit	4, SM	Mixed plant fibers	ISGS-5276	2100	3710 ± 70	-14.4	10	2200-2018 (92.9), 1997-1980 (7.1)	2297-1891 (100.0)
Mound A looter's pit	9, NI	Mixed plant fibers	ISGS-5282	2100	3710 ± 70	-11.6	7	2200-2018 (92.9), 1997-1980 (7.1)	2297-1891 (100.0)
Mound A looter's pit	7, EG	Mixed plant fibers	GX-30122	2230	3790 ± 60	-13.3	15	2330-2322 (2.5), 2309-2136 (94.2), 2078-2067 (3.3)	2456-2437 (1.7), 2424-2421 (1.3), 2404-2358 (6.2), 2354-2110 (79.5), 2102-2035 (11.4)





FIG. 22. Pampa San José photo of dirt-filled woven bags, shicra (J. Haas).

Phase IV includes the construction, use and remodeling of Structure 2, a complex including Walls NA, WG, and WJ and Floor SE with its associated leveling and remodeling layers SC, SD, and SF. Floor SF appears to have been constructed first, possibly a patio area, while the walls were placed next, and apparently the interior surface was leveled with WD. WD was a layer of sandy fill with shicra bags toward the northern end at the base of the unit, filled with sand, not a common construction technique. Part of a shicra bag in WD (#2), the surface on which wall WG was built, was dated to 1870 Cal B.C. (Beta-177314).

Remodeling of Structure 2 includes deposits WD, WC, WB, WI, and WI2. WC was a layer of fill or remodeling that included a sample of plant fibers dated to 1950 Cal B.C. (GX-30125).

Phase V includes the deposits that filled in Structure 1 and leveled the area for Structure 2, EB, SG, SI, WE, WF, NE, NG, NF, and NM. WF included an unusual shicra variant, basketry bags filled with dirt (Fig. 22), rather than the more frequently used shicra bags filled with rock. Adjacent to this was NF, a collapsed roof of

interlaced canes. According to local informants, the discovery of this roof material by the looters motivated them to continue digging, even though the unit had reached more than 2 m in depth, as they believed it was the top of a tomb. They did not find any corresponding tomb. Two samples of roof material were collected for radiocarbon dating (#5 and #6). Sample #6 was processed, yielding a date of 1950 Cal B.C. (ISGS-5276).

Phase VI includes the construction, use, and remodeling of Structure 1, including Floors EE, SL, SJ and NH. Walls constructed at the start of Phase VI include SH and EG. Sample #7 was plant fiber from the mortar over Wall EG. It yielded a date of 2230 Cal B.C. (GX-30122).

Phase VII includes all deposits below the floor of Structure 1 formed by Walls EG and SH with Floor EE. This includes a layer of trash and construction fill, apparently intended to level the surface over Floor SN. This includes fill identified as NI and SM. Two samples from Phase VII were dated. Both sample NI (#9) (ISGS-5282) and sample SM (#4) (ISGS-5276) were dated to 2100 Cal B.C.



TABLE 7. Principal phases of occupation and associated radiocarbon dates at Pampa San José.

Elements	Dates	Date range (1 $\delta$ )*	Strata
14 9–12	postdates 1870 cal B.C.		<b>Structures defined by Walls NA, NC, and NJ</b>
			<b>Structures created by Walls NA, WJ, and WG</b>
	1950 cal B.C. (1GX-30125)	2020–1880	WC: a layer of fill or remodeling of structure WG-NA
	1870 cal B.C. (2Beta-177314)	1950–1740	WD: fill or leveling of structure WJ-NA; the surface on which Wall WG was built
4–8	1950 cal B.C. (5ISGS-5276)	2040–1820	NF: fiber from collapsed roof at side of structure EG-SH
			<b>Structure formed by Walls EG and SH</b>
	2230 cal B.C. (7GX-30122)	2340–2060	EG: fiber from plaster on Wall EG
	2100 cal B.C. (9ISGS-5282)	2200–1880	NI: plant fibers from fill below Wall EG
	2100 cal B.C. (4ISGS-5276)	2200–1880	SM: plant fibers from fill below Wall SH

\* Detailed probability ranges can be found in Table 6.

Phase VIII, the earliest present in this unit, includes only a small fragment of floor (SN) and the fill below it (SO). This deposit is located at the base of the south profile and is a tiny remnant of the earliest construction feature visible in this unit. One radiocarbon sample was obtained from this Phase (SO #11), though it has not been processed.

DISCUSSION: PAMPA SAN JOSÉ—Williams (1985) suggested that Pampa San José dates to the Initial period. However, the architecture and the surface material recorded by PANC at Pampa San José in 2002 suggest occupation during the Late Archaic period. All six dates, ranging from 1870 to 2230 Cal B.C., each from separate proveniences in the profile, date to the Late Archaic. As specific dates, the samples from Pampa San José (Table 6) do not fall in precise temporal order from the lowest to the highest levels. Among the earliest dates that obtained from fiber on Wall EG, 2230 Cal B.C. is earlier than the two dates from the fill below Wall EG, both 2100 Cal B.C. From this we can conclude that Wall EG was constructed after 2100 Cal B.C. However, radiocarbon dates are best expressed as ranges of probability, which in this case eliminates the overlap. Although the results appear less precise, they are more accurate than the individual dates. In comparison with other sites, Pampa San José has a relatively tight date range, indicating primary occupation toward the end of the Late Archaic period. Radiocarbon dates show the site was under construction from before 2230 Cal B.C. until after 1870 Cal B.C. Since the looters did not reach the base of the mound, the profile from which samples were obtained at Pampa San José is not complete. Construction probably began before 2230 Cal

B.C., and significantly earlier dates might be obtained by sampling lower levels of the main mound or in other mounds.

Three principal periods of use are visible (Fig. 21B, Table 7). The first is represented by the structure formed by Walls EG and SH with Floors EE, ED, EC, SL, and SJ. Next, the complex of floors and structures created by Walls NA, WJ, and WG display a period of use and remodeling, while the room defined by Walls NC and NJ demonstrates a third locality on the mound where there was construction and use of a room. These three different structures or areas of construction were identified in different parts of the looter’s pit profile. When we consider that the looter’s hole takes up only a fraction of the top of the mound, 5% or less, there seems to have been a wide variety of structures on the surface of the mound during each phase.

The numerous construction and occupation layers visible in this profile suggest active use and reuse of the mound at Pampa San José, which rose ever higher with each remodeling. The mound was not a structure that was continually rebuilt to a single pattern through repeated replastering of a structure or group of structures. It was a place where different structures in different positions were built, used, covered up or leveled, and eventually replaced by other structures.

**Carretería (02PVGS-4)**

Carretería is located on the right bank of the Pativilca River about 12.5 km from the Pacific coast, north of the former hacienda Carretería. A canal passes along the northern edge of the



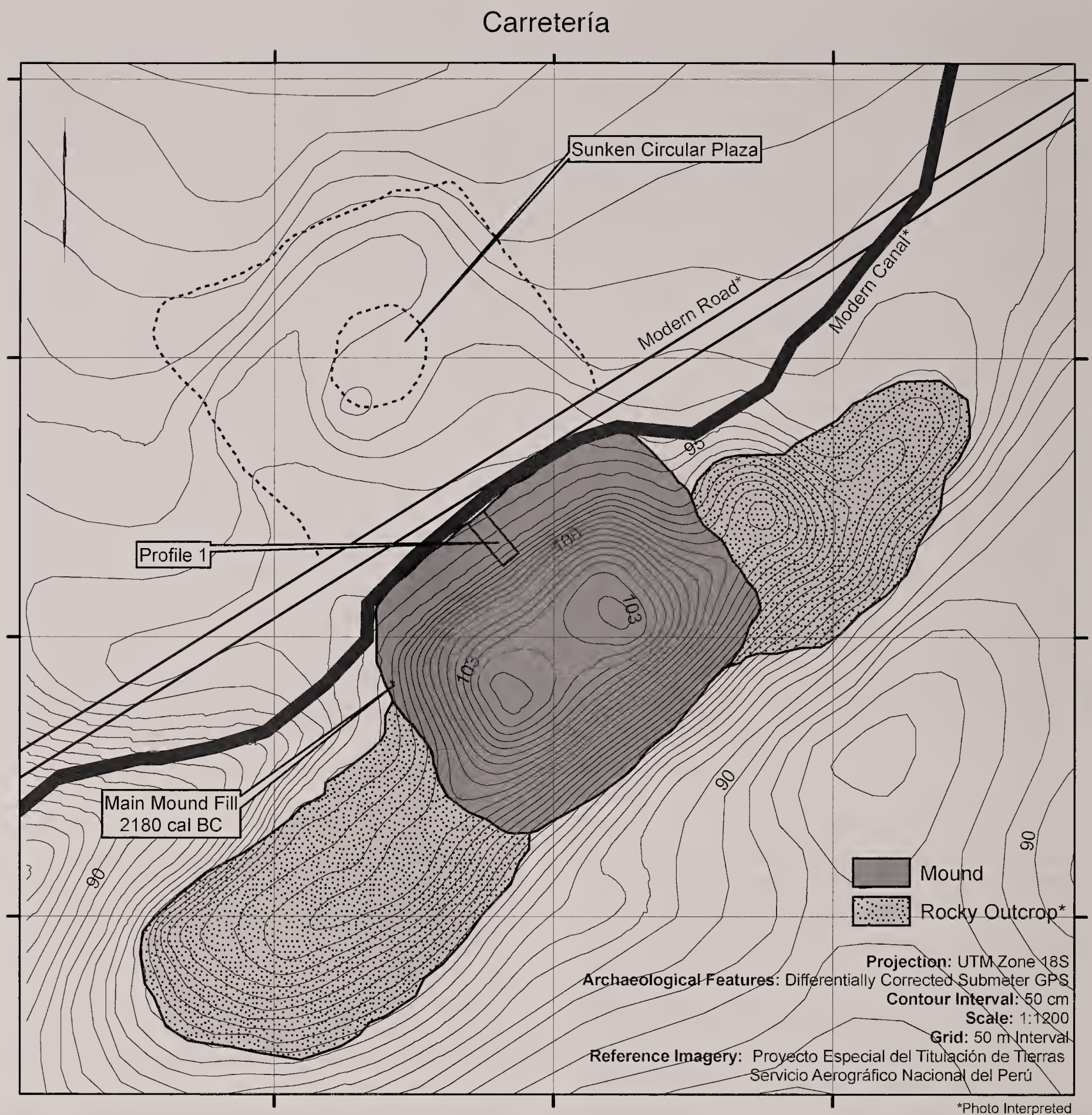


FIG. 23. Map of Carretería showing mounds and other features, sectors, canals, roads, and encroaching structures.

mound (Fig. 23). Like Pampa San José, little remains at Carretería apart from the main mound and a small portion of the sunken circular plaza.

**SECTOR A: PROFILE 1**—Carretería's central rectangular platform mound measures  $32 \times 60$  m and is 6–7 m high. Cultural material visible on the surface includes mollusk valves and lithic fragments. Cement footings remain from modern structures that were atop the mound but have been demolished. From the top of the mound

facing northeast, it is possible to observe the remains of a sunken circular plaza approximately 27 m in diameter that was enclosed by a low rectangular platform and wall. This area measured  $51 \times 56$  m and was destroyed in large part during February 2002. Local cultivators have destroyed or covered over the residential architecture to create fields; every possible area of residential construction associated with the mound has been heavily damaged or completely destroyed.



Profile 1 in Sector A was the only area cleared at Carretería during the PANC investigation. The profile was located on the central part of the mound on its north side, looking out over the sunken circular plaza. The irrigation canal that cuts across the base of the main mound along its north side left an exposed profile, removing a significant deposit from the base of the mound. The Profile 1 trench was cleared from the base to display levels of mound construction and to extract radiocarbon samples.

The mound was constructed of angular rock, primarily irregular chunks of speckled granite, with a light scatter of burned river cobbles, obscuring poorly preserved walls and floors. An extensive series of stratigraphic units were identified during the clearing of Profile 1 at Carretería. The cleared area proved to include the edge of a stairway that appears to have run from the top of the mound to its base on the side facing the circular plaza. The northwest side of the profile revealed steplike tiers of construction, consisting of masonry retaining walls filled with rock and mud. The southeast side of the profile included portions of at least two layers of stairs that climbed the structure. The uppermost set of steps was just below the loose rock and windblown soil covering the mound. A second set of stairs was identified in the upper third of the area cleared, though these seem to have been an earlier set of stairs that ran under the upper set.

- A. a–f. Six shallow steps built of angular rock and clay mortar. These were partially eroded and irregular.
- B. Retaining wall of angular rock in clay mortar extending step f. Additional steps in the sequence that began with a–f did not continue, possibly being eroded away.
- C. Retaining wall of angular rock and cobbles in clay mortar. B and C are the upper and lower portions, respectively, of a retaining wall. However, a distinct layer of fill, possibly a former floor, is sandwiched between the two segments of wall. It appears that wall C may have been a step at an earlier stage and was later covered with clay as part of a remodeling. At a later time, the staircase was reconstructed by raising the height of each step.
- D. Floor of packed and smoothed clay. The radius fragment was found above this surface. This surface was wider than the space between steps higher on the structure.

It is possible that shallow terraces like floor D divided short flights of steps.

- E. Retaining wall at leading edge of Floor D. Wall E did not extend across the area cleared. This may be the result of erosion.
- F. This floor of packed and smoothed clay formed another large step or shallow terrace extending from the base of Wall E to the top of Wall G.
- G. Retaining wall at leading edge of floor F.
- H. A broken area of Floor D revealed angular rock and clay mortar construction below the floor. A small portion of a buried step was revealed as well. The surface was carefully plastered, but any other stairs were covered by Floor D. Step H appears to be a portion of a staircase below the set of steps identified as A.
- I. A layer of fill between Wall B and Wall C, a result of remodeling or rebuilding.
- J. Fragment of clay floor at the base of Wall G. The slope of the mound was more gradual in this part of the profile than higher on the mound. There was not a clear series of constructed steps in this area but rather two sections of clay floor that sloped differently, suggesting that they were different constructions or the result of collapse of the rock and clay mortar below, resulting in an uneven surface.
- K. This fragment of clay floor sloped at a sharper angle than floor fragment J, as mentioned previously. Neither fragment J nor fragment K extended across the cleared area, possibly a result of erosion or collapse. Carretería has been mined for rock and the surface could have been cleared in this space.
- L. A low, raised ridge of adobe was built across this part of the cleared area, forming a semi-circular enclosure. It appears to be a posterior construction. There was no evidence of its age or function, though one of the human bone fragments came from this area.
- M. A low, raised ridge of adobe was built across this part of the cleared area, forming a semi-circular enclosure. It appears to have been built after partial collapse of the structure since it crosses part of a terrace and what appears to be a collapsed portion of Wall O. There was no evidence of its age or function, though one of the clusters of vertebrae came from this area.



- N. Possible wall at leading edge of Floors J and K. This possible wall was eroded and shallow.
- O. Wall at leading edge of Terrace VI. Unlike the other retaining walls, Wall O extends across most of the cleared area. This may have been the base of both the staircase and the large steps adjacent to the staircase or a place where the staircase changed dimensions.
- P. A broad terrace fragment extended from the base of Wall O downslope. It appeared to be a terrace that had slumped because of erosion and canal construction below it on the mound.
- Q. A damaged portion of the terrace surface was cleared and revealed an earlier wall segment buried by Terrace P. The construction material was angular rock and clay mortar with no evidence of shicra.
- R. Step fragment, possibly a continuation of stairs (a–g) or part of an earlier staircase, such as (h).
- S. From the lowest identifiable margin of Terrace P, clearing revealed a rubble slope above the canal. This area was steeply inclined and was not further cleared.

This profile revealed different features in the eastern and western halves of the unit cleared (Fig. 24). On the southeastern side, the edge of a stairway that extended from the summit to the base of the mound was uncovered, along with evidence of remodeling. On the northwestern side of the unit, five large steps suggest the mound was constructed of several superimposed terraces, as indicated by a series of large stone blocks that formed the corners of retaining walls I–VIII. Each terrace was constructed of angular rock and clay mortar. No evidence of shicra used in construction was revealed during clearing. This may be a result of remodeling efforts or the use of shicra only for extensive areas of construction, like platform fill.

Unlike the other sites examined, fragments of human bone were found dispersed across the entire unit at Carretería, though no articulated elements were recovered. These included a single skull fragment, a humerus fragment, and a radius fragment along with a metacarpal and a carpal bone. Vertebrae were found in two places (Fig. 24).

Analysis of this profile identified five occupation phases at Carretería, though it is

likely that additional layers would be revealed by further excavation, as the trench was intended only to clear a section that had been damaged, not to excavate the surface of the mound that was preserved below the loose rock and soil.

Phase 1: At the end of or following the occupation of the mound at Carretería, a series of low, curved walls were constructed over the staircase to create small enclosures.

Phase 2: The upper surface visible in Profile 1 at Carretería was the remodeling of a staircase (a–f).

Phase 3: Below the Layer 1 staircase (a–g) was a previous stairway (h and possibly r).

Phase 4: Construction of the platform mound included a series of stepped terraces (I–VII).

Phase 5: An early mound surface or an early, broad staircase is represented by Wall Q, which was covered by construction of Terrace VII.

This does not represent a complete construction sequence but summarizes the construction visible in the area cleared. These construction layers were revealed by erosion of the mound surface. A more complete understanding of the construction sequence would require additional excavation.

DISCUSSION: CARRETERÍA—Carretería is adjacent to the Pativilca River floodplain, where there is an abundance of rounded river cobbles. Although cobbles were readily available, there was deliberate selection of angular quarried stone for the mound construction, and at Carretería, the angular rock is quite uniform, a distinctive pale granite with dark speckles.

By clearing Profile 1 in this area, it was possible to make a detailed record of the modifications made in the access from the circular plaza to the atrium of the principal mound. The mound in the area of Profile 1 was largely built of rock set in clay mortar with no visible shicra. Clearing alone did not penetrate the structure enough to reveal shicra bags in the construction material of the main mound in this central and heavily remodeled area. When no shicra was identified during the clearing of Profile 1, the mound was examined closely for eroded places where construction might be visible. Remains of shicra bags were found in a small profile exposed by the irrigation canal on the southwest side of the mound. Apparently, shicra was used in initial mound construction but not in later remodeling. On a flanking structure, shicra bags were visible in eroded areas above the irrigation canal. This area was apparently not



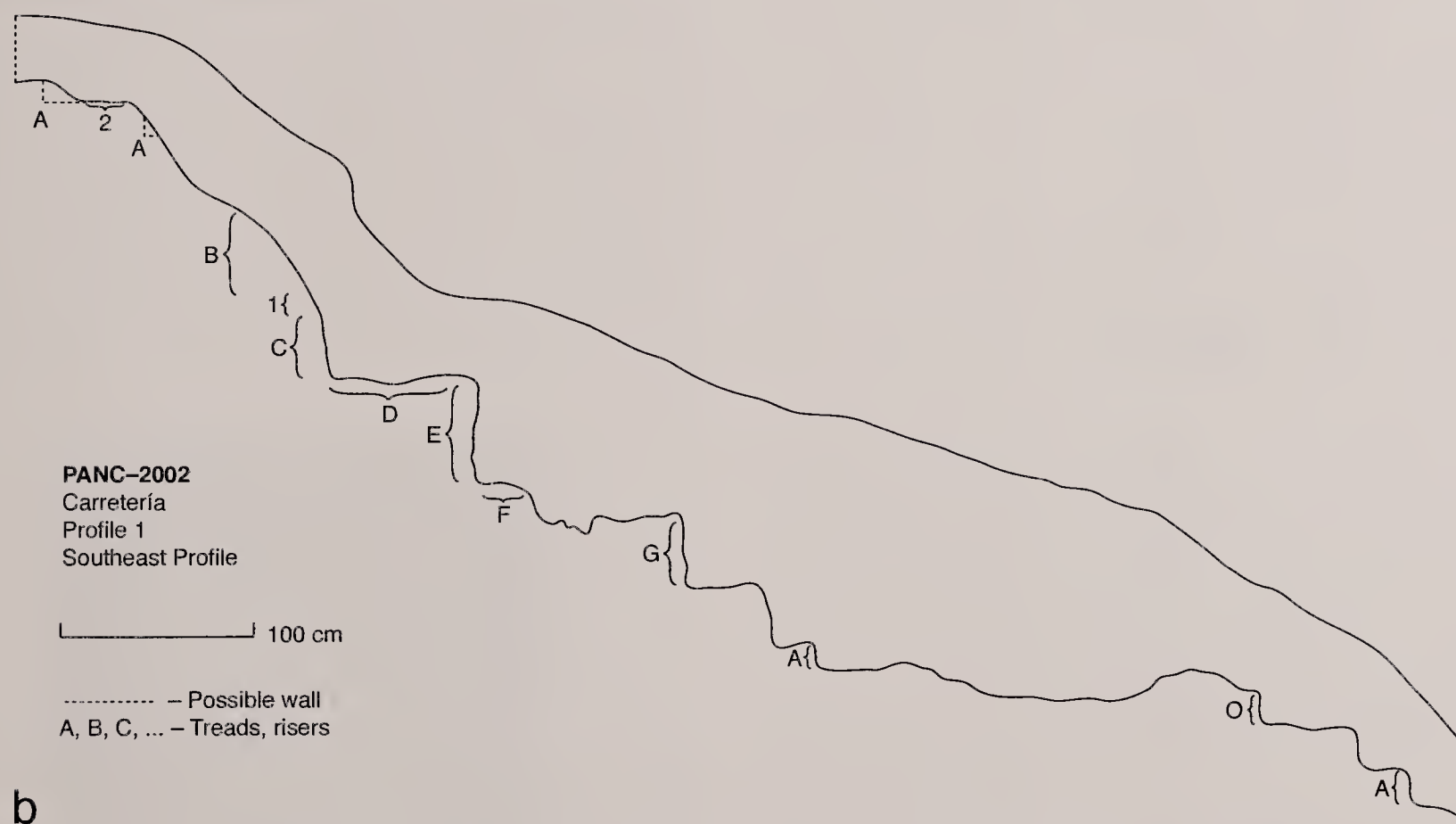
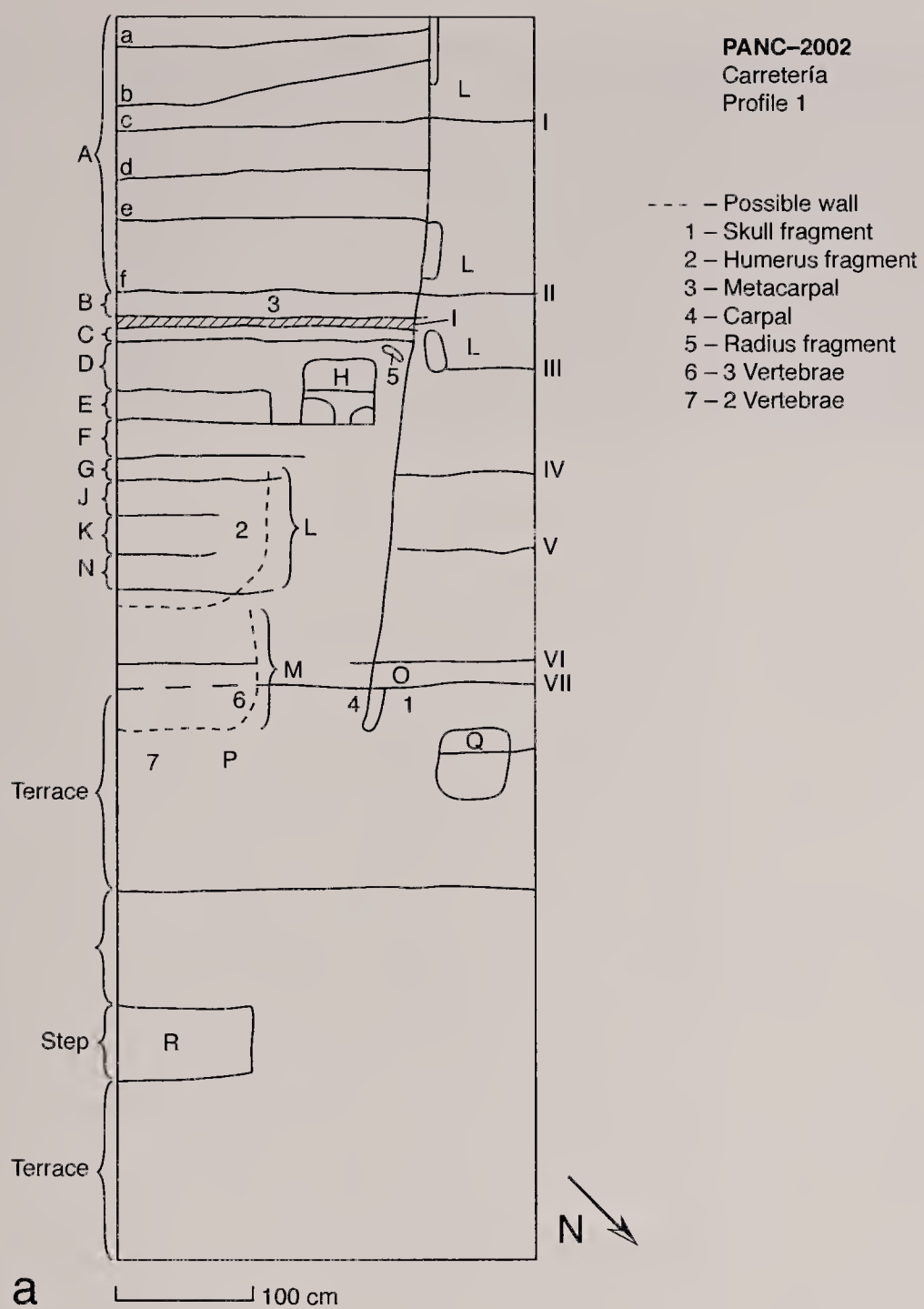


FIG. 24. Profile 1 at Carretería, including location of human remains.



TABLE 8. Carretería radiocarbon dates from samples obtained in 2002.

Provenience	Material	Lab no.	Cal. B.C.	RCYBP	<sup>12</sup> C/ <sup>13</sup> C	Weight of sample (g)	Calibrated age range 1 sigma (68.3%) B.C.	Calibrated age range 2 sigma (95.4%) B.C.
Main mound fill	Fiber bag	ISGS-5286	2180	3760 ± 70	-12.2	15	2287-2246 (18.5), 2239-2112 (57.3), 2097-2039 (24.3)	2456-2447 (.5), 2432-2422 (.5), 2404-2361 (3.7), 2354-2007 (91.6), 2003-1975(3), 1972-1961 (.7)

subject to remodeling after its initial construction since the shicra was both *in situ* and exposed on the side of the mound and not an isolated occurrence. The sample collected from this location was dated 2180 Cal B.C. (ISGS-5286) (Fig. 23, Table 8). This single date suggests that the Carretería mound was constructed during the period 2290-2030 Cal B.C. and that it was subsequently remodeled on multiple occasions.

While a single date is not definitive, it does correlate with the absence of ceramics in all fill material and the overall pattern of a large platform mound associated with a sunken circular plaza, the Late Archaic pattern. It should also be noted that the one date from Carretería falls well within the available suite of dates for Pampa San José. The main mound complexes for these two sites are less than 2 km apart, and the two main mounds with associated sunken circular plazas face one another (Fig. 25). While any possible relationship between these two sites cannot be determined at present, it is likely that they were aware of each other and had some kind of connection, whether it was temporal, competitive, cooperative, or political.

**Huayto (02PVGS-5)**

Huayto is located on the right bank of the Pativilca River on the summit of an elevated natural feature immediately north of the village of the same name. The site occupied the north/northwest portion of a large landform, a dissected plateau or foothill spur extending out from the hills to the west (Fig. 26). The Huayto site consists of several mounds constructed around an open plaza (Fig. 27). Three mounds are preserved and form Sectors A, B, and C. Sector D was a small mound located at the extreme north end of the site. Sectors F, G, and I are other mounds that are partially or completely destroyed. Sector H, southwest of Sector D, is not a mound but an area with marine shell and stone fragments on the surface.

Unlike the other sites tested, there does not appear to have been looting at Huayto; the destruction is the result of local housing construction. Air photos dating to 1969 show the top of this landform only lightly occupied. Since that date, the expansion of construction has affected all but Sectors A, B, and C. Structures were built around the ceremonial nucleus of the site that destroyed or largely covered an area that



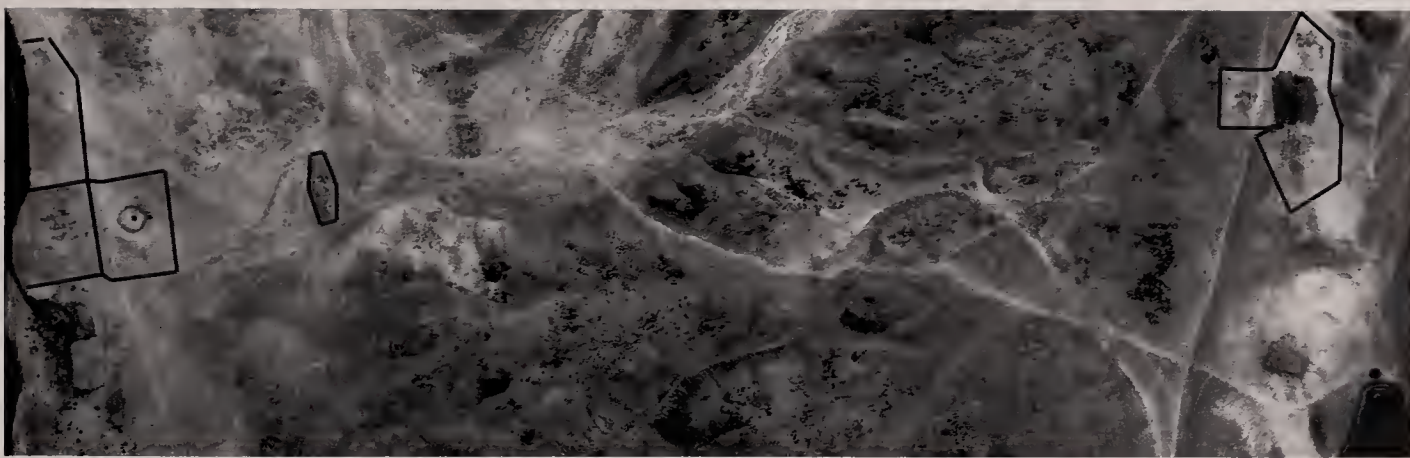


FIG. 25. Air photo (SAN 1970) showing the relationship between Pampa San Jose (left) and Carretera (right).

presumably had been occupied by residential architecture. Today five houses form the southern boundary of the ancient settlement. The local community recently constructed a soccer field in what was probably the ceremonial center of the site, completely destroying the Sector F mound and part of the others. From the architecture and construction materials, Huayto appeared to date to the Late Archaic period, and surface ceramics indicate that the site was later reoccupied.

One profile was cleared and recorded at Huayto, on the N/NE slope of Sector C. A trench  $3 \times 7$  m was cleared in an area that proved to have been heavily disturbed. The profile exposed some original construction and provided information about building techniques and the possible sequence of occupation. The organic material included shicra and other plant fiber suitable for radiocarbon dating.

SECTOR A—Sector A includes a rectangular platform mound  $68 \times 75$  m at the base and 7 m high. The surface of the mound is covered with river cobbles of different sizes and a very small quantity of ceramics. There has been some collapse on the rear of the mound. In the

exposed profile, river cobbles in mud mortar are mixed with mollusk valves. No ceramics were found in the exposed portion of the Sector A mound. A shallow depression indicating the presence of an atrium can be seen on the summit of the mound on the plaza side of the structure.

SECTOR B—Sector B includes an elongated rectangular mound measuring  $55 \times 127$  m. The northwest half of the mound is 9 m high, ending in a level terrace. The other half of the Sector B mound is lower, approximately 3 m high, and is the location of modern corrals. The surface of this structure is covered with river cobbles with very few ceramics. The margin of Sector B that faces away from the plaza (Sector E) slopes steeply to an escarpment that appears to be natural but has been made even steeper by excavation of a canal just below the rim of the escarpment.

SECTOR C—Sector C includes an elongated rectangular mound measuring  $50 \times 95$  m. Sector C forms the right arm of the overall rectangular or U-shaped arrangement of structures on the north face of the platform. The Sector C mound includes two rectangular platforms that divide the summit in two. Both platforms are similar in size and are about 8 m high. The platform mound that comprises Sector C has been degraded by the action of heavy machinery on the lower slopes of the mound and by the construction of a corral, now abandoned, on the summit. The surface is covered with medium and large cobbles, a small quantity of ceramics, mollusks, possible lithics, a few animal bones, and botanical remains, including gourd fragments, charcoal, seeds, and stems.

SECTOR C: PROFILE 1—A trench  $3 \times 5$  m, was cleared and then extended to  $3 \times 7$  m. The deposits varied from the upper to the lower end of the unit.

Layer 1 was a thin layer of partially compacted orangey sand that contained no cultural



FIG. 26. Air photo of Huayto, located atop a triangular landform dissected from nearby hills.



material. It appeared to have been deposited relatively recently at the highest point cleared.

Wall A was built of cobbles approximately 10 cm in diameter set in clay mortar. The construction was irregular in appearance, likely to have been part of a corral or a temporary structure. Beneath the wall of river cobbles were remains of sugarcane ash and fragments of mortar.

**Wall A**—Modern wall of medium cobbles approximately 10 cm in diameter. Beneath the wall of river cobbles were remains of sugarcane ash and fragments of mortar. The wall was of poor but consistent construction.

Layer 2 was a layer of loose cobbles in gray/beige sand with some gravel. Very little cultural material was present, including a few mollusk shells mixed with clods of clay that may come from collapsed walls.

Layer 3 was an accumulation of loose cobbles and pieces of mortar. Very little cultural material and very little soil was present in this rocky area. The rock may come from collapsed structures or walls.

**Wall B**—This ancient wall was built of large cobbles with mortar filling the spaces between cobbles. The cobbles were placed in uniform rows. Wall B was identified when the loose material had been cleared from this area. Wall B was built of large cobbles with mortar filling the spaces between cobbles. The cobbles were placed in uniform rows.

Layer 4 consisted of gray soil and medium sized cobbles at the south end of the cleared area.

A shicra bag fragment was uncovered at the edge of Wall B (Fig. 27A). This sample was dated 2240 Cal B.C. (ISGS-5285). A sample from another shicra bag found at the south end of the unit (Fig. 27B) was dated 2270 Cal B.C. (Beta-117312) (Table 9).

Analysis of this profile identified three phases of occupation in the area that was cleared.

Phase 1 includes the relatively recent deposition of an orangy layer, probably contemporary construction debris.

Phase 2 leveled the summit of the mound. Deposition of a thick layer of sandy material appears to have occurred after some wall collapse as indicated by the lumps of mortar present. Wall A separates Layers 2 and 3. The wall may have been built to contain the material deposited in Phase 2 or may have been reused as a retaining wall.

Phase 3 showed deposition of gray soil at the south end of Profile 1. Only a small corner of this deposit was identified, but it appears to be under deposition related to the collapse of structures.

Phase 4 may be the same date or later than Layer 2. From the thickness of the layer and the scanty cultural remains this appears to have accumulated over a period of time from collapse of structures and the gradual erosion of the mound summit and sides.

Phase 5 includes Wall B, which appears to be part of the initial construction of the mound.

**Conclusions**—From the information revealed during excavation of Profile 1 at Huayto, some of the mound remains are preserved, as indicated by the presence of Wall B. However, that surviving portion of Mound B is covered by almost a meter of collapse and other subsequent deposits. Substantial additional excavation would be required in order to reveal the extent of the structure that is preserved in this sector. The presence of shicra bags in the cleared profile supports the suggestion that Layer 4 accumulated from the collapse of structures after the site was abandoned. If the area were abandoned for an extended period, many shicra bags may have disintegrated, leaving only the few that were covered when walls collapsed. The two dated samples were obtained from Layer 4, suggesting that the mound had been constructed and possibly was abandoned and in the process of collapse by 2270–2240 Cal B.C. The consistency of these two dates is reinforced by the fact that each was analyzed at a different laboratory.

**SECTOR D**—This includes a small irregular-shaped mound measuring approximately 55 × 65 m located northwest of Mound B and about 1 m high. The surface is covered with river cobbles. A few ceramic fragments are present in the areas where river cobbles are not present, and the loose sediment includes some mollusk valves.

**SECTOR E**—This includes an open area surrounded by Sectors A, B, C, and F. The area is partially covered with loose river cobbles. However, there are some places where the stones have been cleared, such as the soccer field, where loose soil, a deep brown color, containing mollusk valves and fragments of ceramics, can be seen. Toward the corner formed by the mounds in Sectors A and B, a slight depression can be seen in the surface; this probably was a sunken circular plaza that has been filled in with cobbles from the surrounding area.



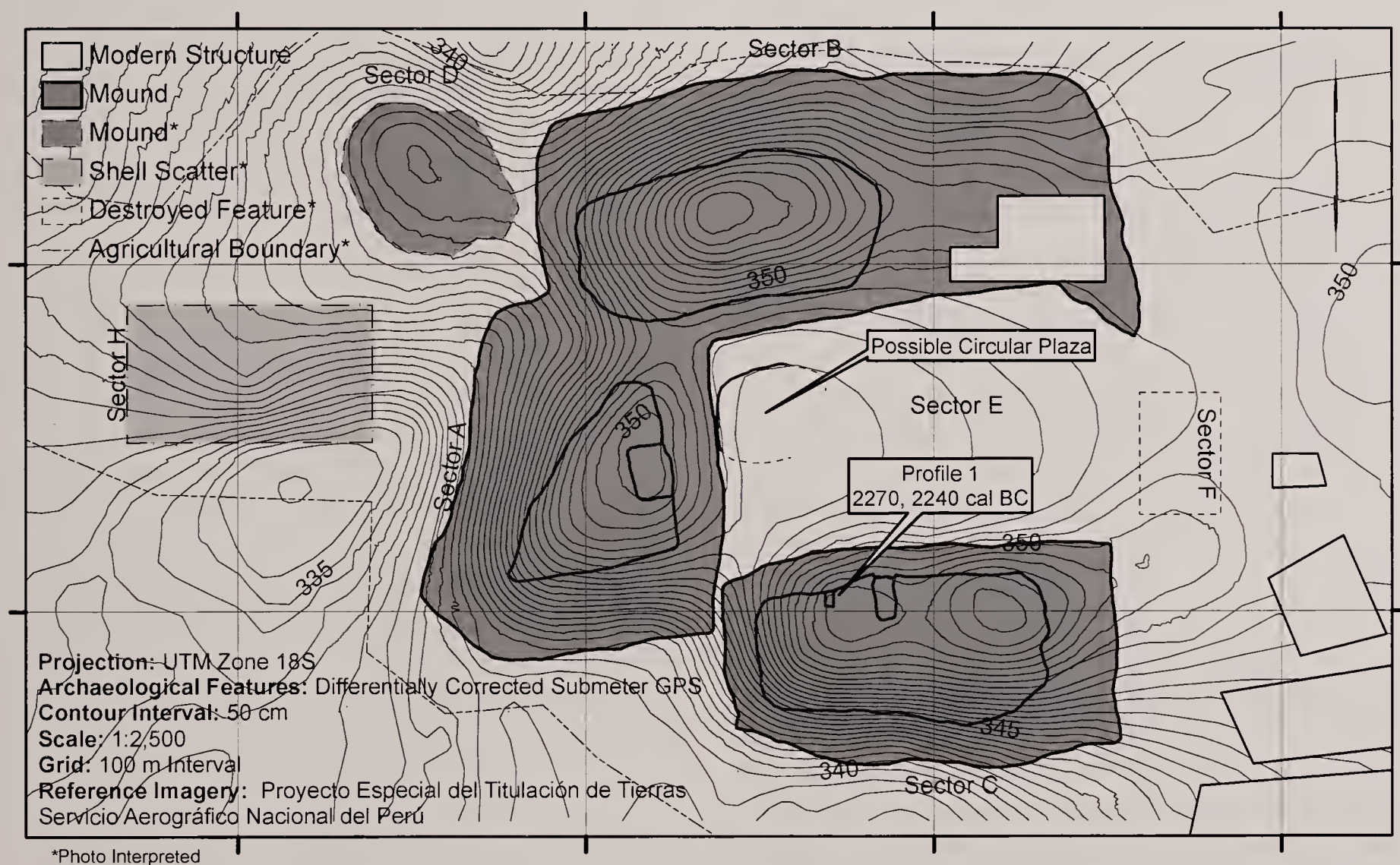
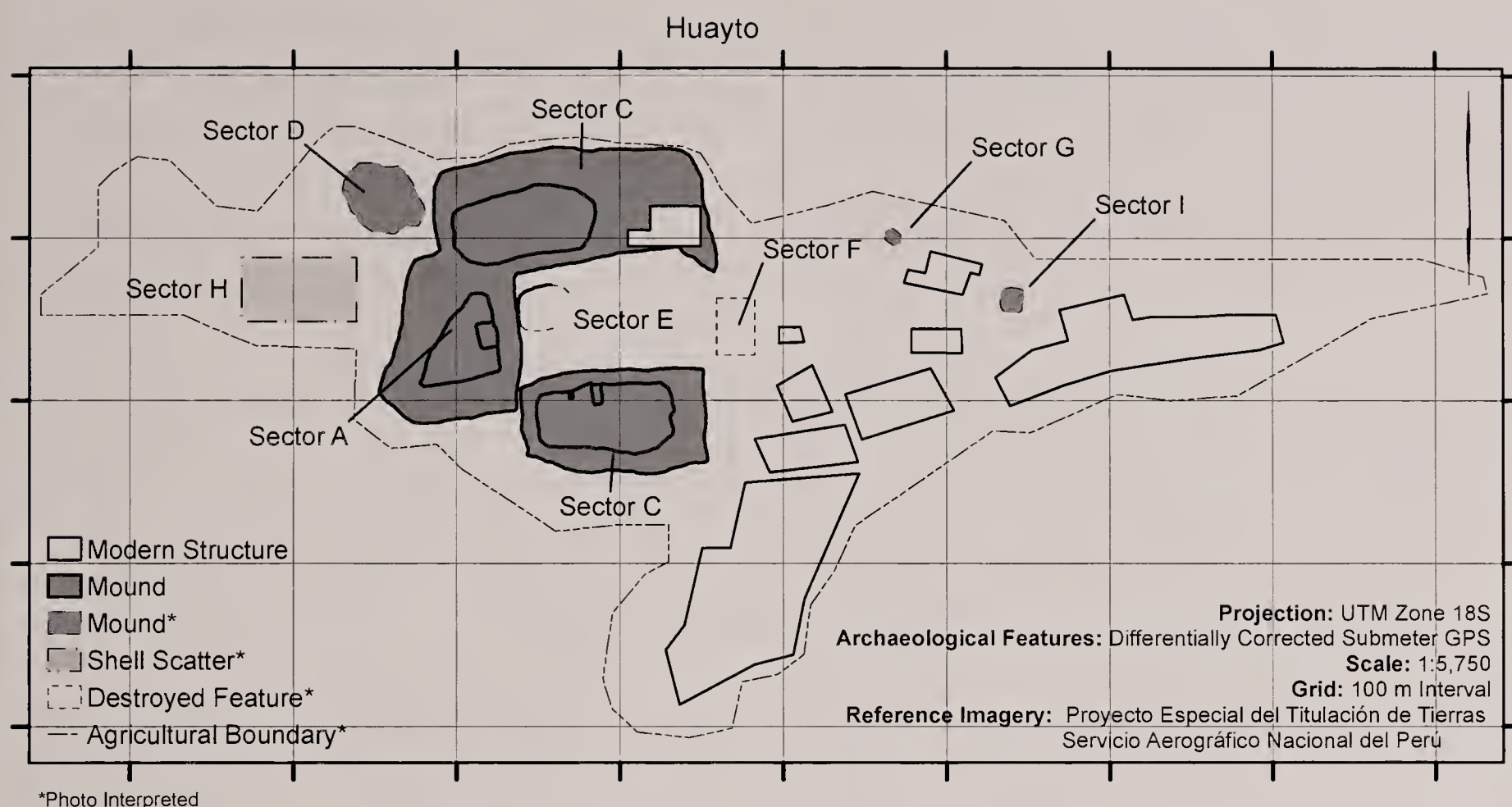


FIG. 27. Map of Huayto showing mounds and other features, sectors, canals, roads, and encroaching structures.



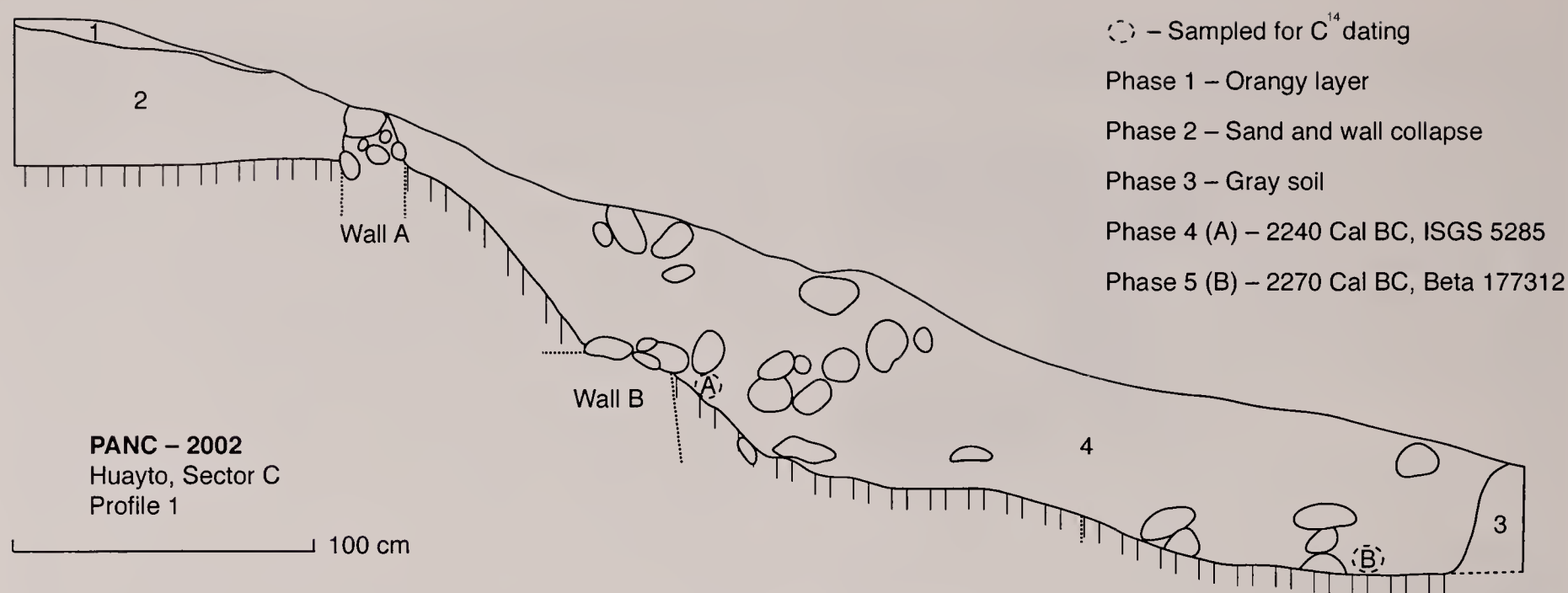


FIG. 28. Profile 1 at Huayto.

**SECTOR F**—This sector is located east of Sector C and includes a destroyed mound on the surface of which are numerous loose river cobbles, mollusk valves, and fragments of ceramics. Near the mound in Sector C is a high spot. Aerial photos of Huayto show that Sector F was originally rectangular with dimensions similar to those of the mound in Sector C.

**SECTOR G**—Located to the east of Sector F, this includes a damaged mound. On the surface of Sector G, only a few cobbles, flakes, and mollusk shells are visible. No architectural elements are visible, and ceramics were not observed. The area of material culture covers about 10 × 15 m.

**SECTOR H**—This includes a level area west of the mound in Sector D. On the surface, mollusk shells and a few fragments of ceramics are present. In a few shallow holes in the surface, lenses of ash can be observed. It is likely that this was a domestic area. No walls or architectural features are present, and at present this sector has been divided into lots for the construction of houses.

**SECTOR I**—This is located southeast of Sector G. It includes a small mound, approximately 5 × 9 m and 1.5 m high. Only rounded cobbles are visible on the surface, which is presently being used as a corral. Between Sectors G and I are a group of contemporary houses that may have destroyed and covered archaeological remains. On the surface surrounding these houses are mollusk shells and ceramic fragments.

**DISCUSSION: HUAYTO**—Unlike other sites in the Pativilca Valley, Huayto is situated in a defensive location, atop a steep sided terrace. While Late Archaic sites in the region often have a U-shaped

layout (Haas et al. 2004), Huayto formed a closed rectangle comprised of Sectors A–C and F. The two radiocarbon dates from Huayto are closely clustered, suggesting that the Sector C mound was built with at least some shicra bag construction by 2270–2240 Cal B.C. The symmetrical arrangement of structures in Sectors B and C, each apparently topped by two platforms, and the position of the Sector A mound suggest a coordinated construction plan. The Sector A mound with the atrium facing into the plaza (Sector E) probably was connected to a sunken circular plaza by a staircase. The circular plaza is no longer visible, though it could be buried rather than destroyed.

Huayto is a site that is in imminent danger of being destroyed by the expansion of modern settlement. However, it also appears to have had a substantial ancient history. The mounds still visible appear to date to the Late Archaic period. The excavations revealed even more disturbance than is visible on the surface. Although ceramics are visible on the surface, these appear to be postdate use of the site. Local residents described extensive ceramic-bearing cemeteries in the area around Huayto away from the mounds that were associated with later occupations located closer to the river or agricultural fields.

## Cerro R

Cerro R is located some 2.5 km northeast of the city of Barranca. The site is a funerary zone, located on the slopes of Cerro R on the left margin of the Pativilca River. There are at least four distinct looted cemeteries spread across



TABLE 9. Huayto radiocarbon dates from samples obtained in 2002.

Provenience	Text and illustration location	Material	Lab no.	Cal. B.C.	RCYBP	$^{12}\text{C}/^{13}\text{C}$	Weight of sample (g)	Calibrated age range 1 sigma (68.3%) B.C.	Calibrated age range 2 sigma (95.4%) B.C.
Mound C, Profile 1	A (Bag 17)	Fiber bag	ISGS-5285	2240	3800 $\pm$ 70	-12.0	12.6	2397-2384 (4.6), 2345-2138 (95.4)	2460-2111 (89.8), 2101-2036 (10.2)
Mound C, Profile 1	B (Bag 18)	Fiber bag	Beta-177312	2270	3820 $\pm$ 70	-9.7	11	2401-2377 (9.3), 2350-2191 (76.8), 2178-2142 (13.9)	2466-2123 (94.2), 2096-2040 (5.8)

this extensive area of sandy and rocky hills. Cerro R is characterized by sand surrounding rocky outcrops whose slopes have been damaged by looting. The site is divided into three different sectors by the presence or absence of archaeological material on the surface. No architectural features were observed in any part of the site.

In almost all sectors of the site, human bone and lithic and mollusk fragments are abundant around areas of looting. This is clearly a cemetery that was used during different time periods. A significant number of burials have been looted across this site, though there are also areas that are undisturbed. Many of the areas have associated ceramics in the back dirt, but some do not. There are some fragments of twined textiles on the surface that may date to the Late Archaic period, though a majority of the textile fragments visible are flat-weave or other loomed varieties from later, ceramic periods.

Areas of the cemetery that are likely to be preserved have reduced numbers of mollusk, lithic, ceramic, gourd, and cotton textile fragments on the surface. Large areas of the site are being actively destroyed by new house construction and associated residential infrastructure, however, so areas appropriate for testing may disappear in the coming years.

The small quantity of ceramics observed and the large number of mollusk fragments distributed across Cerro R suggest that this could have been a funerary area of the Late Archaic period with a subsequent period of reuse. PANC members cleared three areas on the surface of Cerro R that had been looted to examine the surface below the loose sand for evidence of burial pits or other features.

In Sector A, two areas, Units 1 and 2, were cleared, each 5  $\times$  5 m in area.

Sector B was an area similar to Sector A, with extensive evidence of looting.

Sector C was an area that appeared to have experienced less looting than the other portions of Cerro R. One 5  $\times$  5-m unit was excavated in this area.

SECTOR A: UNITS 1 AND 2—Sector A is located on the southern slope of Cerro R, which slopes toward the basin at the center of the hill. Measuring 100  $\times$  50 m, the surface of this sector is covered with mollusk fragments, lithics, gourd fragments, and a small number of human bones. Sector A is a heavily disturbed area. The entire zone is being used as a sanitary landfill for the



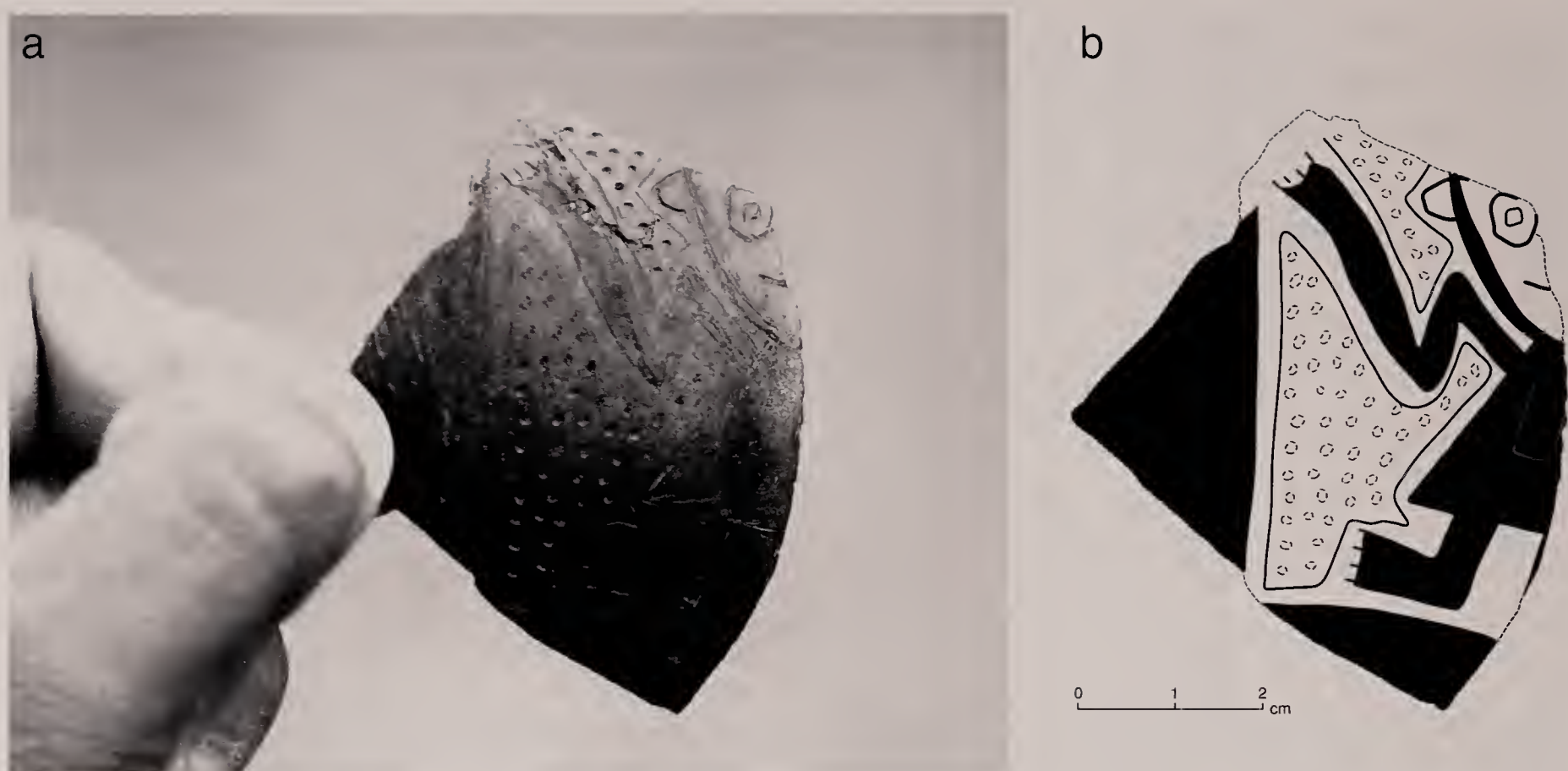


FIG. 29. Incised gourd figure from Cerro R.

inhabitants of the nearby new settlement. There is also active looting of the cemetery in this area. As a result, surface materials included textiles, hair, and human bone. A fragment of gourd inscribed with an upright figure was found on the surface of Cerro R. The motif pyroengraved on the surface of the gourd is similar to that found at the neighboring site of Cemetery P (Fig. 29, cf. Fig. 32).

In Unit 1 of Sector A, an area of  $5 \times 5$  m was cleared. The goal of the work was to identify the outline of looter's pits and to identify the size and construction of burial pits damaged by looting. All surface material was screened, and all artifacts and bone were collected. Carbon samples were obtained from fiber exposed while clearing, though no intact burials were identified. The carbon samples from Cerro R have not been processed.

In Sector A, Unit 2, two layers were identified during clearing.

Layer A included damp, unconsolidated sandy sediment with fragments of shell, textiles, beads, gourd, some human bone, and plant materials, including seeds and gourd fragments. Layer B was the product of disturbance by looters excavating burials. Patches of sand of different shades of brown showed overlapping piles of debris, including human bone, teeth, textiles, shell, gourd, botanical remains, and a few ceramic fragments. A piece of newspaper with a date of 1984 also came from this layer.

**Conclusions**—At this site, clearing of surface material did not yield the same kind of results

that can be obtained by clearing architectural remains. Thus, though radiocarbon samples were collected, these were not *in situ*. The outlines of burial pits that were anticipated in this area were not preserved below the disturbed surface material.

**SECTOR B**—Sector B is located in the next sheltered slope of the hill to the north of Sector A, to the southwest of the new settlement “Los Arenales.” This sector is another funerary area, and on the surface a great deal of human bone, textile fragments, and a few ceramic fragments can be seen. Few mollusk shells were observed in this sector, which has been looted over its entire area.

**SECTOR C: UNIT 1**—Sector C is located 500 m northeast of Sector B on the margin of the central basin in the hill. Similar to the other sectors of Cerro R, Sector C covers an area that slopes down to cultivated fields. This appears to be another funerary area based on the mollusk shells, textile fragments, and a few human bones on the surface. Only one ceramic fragment was recorded here. This zone has only been slightly affected by looting.

Unit 1 is part of a looted cemetery in Sector C. There are portions of this cemetery where ceramics are not visible on the surface or where the quantity is very small. A nearby settlement is expanding, covering part of the cemetery. Further expansion of housing could cover more of the cemetery, while gray water and sewage



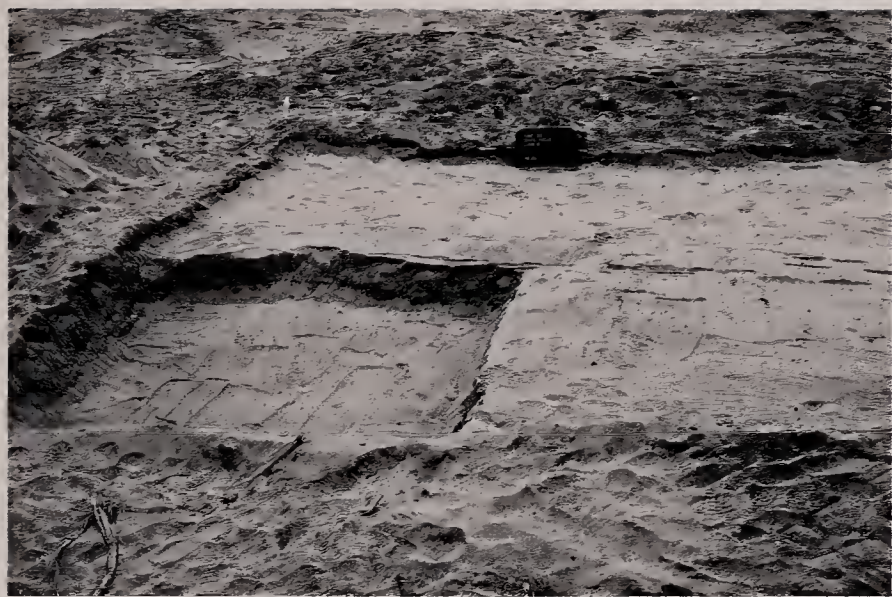


FIG. 30. Photo of Cemetery P cleared area (W. Creamer).

could eventually permeate the area, destroying the archaeological materials below the surface.

Unit 1 was excavated in levels since the area consisted of an extensive deposit of sand with very little visible differentiation across the area cleared or from top to bottom within the deposit. During the clearing, three levels were established, each approximately 10 cm thick. Bone, textiles, lithics, mollusks, ceramics, remains of painted gourd, scraps of wood, and feathers were recovered from the levels. It was possible to define sectors of the unit where no ceramics at all were present. Clearing of this previously disturbed area was intended to identify the density of cultural material and to obtain samples of organic remains related to the cultural deposits suitable for radiocarbon dating (Fig. 30).

Level 1 included ceramic fragments, shell textiles, and human bone. Textile fragments from looted burials were so numerous that only a sample was retained.

Level 2 was similar to the previous level, including sandy sediment with ceramics, shell, textile fragments, and human bone.

Level 3 was a continuation of the previous level, with a small, blackened area in the northeast corner of the unit. Materials recovered included bone, shell, textile fragments, and ceramics.

**Conclusions**—The goal in this unit was to clear loose, surface material. Although no features could be distinguished, the volume of material demonstrates extensive looting in this area. Further excavation might yield the base of looted burial pits. The profile view of the unit did not show any stratigraphy in the sand.

Numerous textile fragments and other remains associated with funerary activities were recov-

ered from Unit 1. However, a distinction among the levels cannot be made because no stratigraphy was visible, nor were any remains of burial features present. Thus, the material cleared from the surface at Cerro R can be considered only as a single phase of cemetery use.

**DISCUSSION: CERRO R**—When looters leave their excavated pits, sand drifts in, resulting in an undulating surface across the entire area of Cerro R. However, below the surface, the contours of areas excavated by looters were not preserved as we had expected, nor was there evidence of burial pits. A broad area similar to those cleared in Sectors A and C would need to be excavated, not just cleared of loose surface sediment, in order to obtain *in situ* samples for radiocarbon dating and to record pit outlines.

The immediate goals of clearing areas at Cerro R were to obtain samples for radiocarbon dating and to examine burial pits remaining after looting. Although some samples of plant fiber were collected, these were not from materials that could be clearly distinguished as *in situ*. The sandy surface material was loose and shifting, and the samples were obtained from screened sediment. The objective of obtaining radiocarbon samples can be considered only minimally successful as a result. No dates were processed from Cerro R, though the fragment of incised gourd fragment from this site is similar to the fragment from the Cemetery P site that is dated 2220 Cal B.C. (see below).

## Cemetery P

Cemetery P is located on the left margin of the Pativilca River, about 2 km northeast of the city of Barranca on the slopes of a small hill of the same name. Cemetery P is a long, sandy area with a north-south axis and is clearly a funerary zone.

This site consists of a single extensive cemetery area that was heavily looted in the past and a small area of current looting. On the slope opposite the hill south of the looted burials is another area where mollusk fragments and lithics can be seen on the surface that probably represents an undisturbed Late Archaic cemetery. The surface of the looted area is covered with human bone, mollusk fragments, lithics, an abundance of gourd bowls, and cotton textiles.

Cemetery P can be divided into four sectors differentiated by the presence or absence of



archaeological material on the surface. It is probable that these funerary areas include Late Archaic layers, which would explain the very small quantity of ceramics in Sector A. Portions of Sectors B, C, and D have been heavily looted, yet only a small quantity of ceramics is apparent on the surface (cf. L. Haas, 2004). In spite of this, it is still possible to distinguish intact areas in these sectors.

All sectors have numerous lithic fragments and mollusk shells on the surface. Large blocks of scoria from smelting metals cover part of Sector B. The sediment around the scoria is reddened, suggesting that this was a metalworking area at some point, though no architectural elements were identified.

**SECTOR A**—Sector A is located on the southwest slope of the hill and includes an area approximately  $100 \times 100$  m. On the surface, which is only slightly disturbed, were mollusk valves, a few fragments of ceramics, gourd vessel fragments, a few corncobs, and a fragment of spondylus shell. A small number of human remains were spread across the surface along with remains of textiles and basketry. Sector A appears to be an early cemetery.

**SECTOR B: Unit 1**—Sector B is located on the northeast slope of the hill, including an area  $100 \times 200$  m. Like Sector A, there was no architecture present, and the surface was heavily disturbed by looting. There were numerous remains of textiles, some decorated, principally with parallel brown lines. Fragments of basketry, ceramics, and beads were also found. There was also cotton, possibly fragments of funerary bundles, and corncobs. The mollusk valves were spread across the entire surface, though the only distinctive mollusk was the fragment of spondylus. In the southern portion of Sector B, an area approximately  $40 \times 60$  m, were some large blocks of scoria from metal smelting, in an area where the sediment had been burned red. In this area, a small piece of sheet copper was recovered. In this sector, at least two different occupation layers are present, one having a funerary function and the other a metallurgy workshop.

In Sector B, a  $5 \times 5$ -m disturbed area on the east side of the cemetery was cleared in an effort to identify the dimensions of constructed burial pits. All surface material was screened, and all the artifacts and bones were collected. The recent looter's holes were cleared in order to draw profiles. Radiocarbon samples were collected

from the plant fibers exposed during the clearing of profiles. No burials were excavated.

Five layers were identified in Unit 1.

Layer A consisted of aeolian sand. Remains of textiles, ceramics, lithic artifacts, wood, and basketry were widespread since the cemetery has been heavily looted (Fig. 28).

Layer B was composed of loose sand that was recently deposited. Cultural material was present as a product of the looting of burials. Burials were placed in sand mixed with a few fragments of angular rock. The layer included disturbed human remains, though no features were visible, and the sand was uniform in texture and contents. Artifacts recovered included ceramics, botanical remains (especially squash seeds and some black-colored grains), fragments of cotton, and a variety of other textiles, human and animal bone, lithics, beads, feathers, and worked wood. None of the human remains were articulated.

Layer C deposits were composed of loose sand with some rock inclusions. Disarticulated animal and human bone, textiles, botanical remains, beads, metal (small fragments of copper), and other materials were present, though no features could be identified, and the layer was uniform in texture and color. The base of Layer C was marked by a distinctive color and a change of texture.

Layer D was a compact layer of dark reddish-brown clayey material with caliche dispersed through the layer. No artifacts were recovered.

Layer E's compact gray sandy soil was excavated to be sure that Layer D was not a lens of sterile sediment that was covering cultural deposits. Layer E included no cultural material.

**Conclusions**—Although it would have been possible to continue excavation, the objective was to clear loose surface material, and for this reason, excavation did not continue. It would be productive to excavate an entire unit at Cemetery P to sterile subsoil or bedrock to establish the date of use of each sector and the depth of the deposits. Unit 1 did yielded minimal stratigraphy with color change in the sand in Layers D and E. However, the bulk of the artifacts were recovered from Layers A, B, and C, where no stratigraphy was visible, yet there were numerous artifacts and human bone fragments present from looted graves.

**SECTOR C**—Sector C is located on the northeast slope of the hill. On the surface are mollusk valves, textile fragments, pieces of gourd vessel, and human bone dispersed across an area  $50 \times 100$  m. Looting has damaged this sector.



50 cm

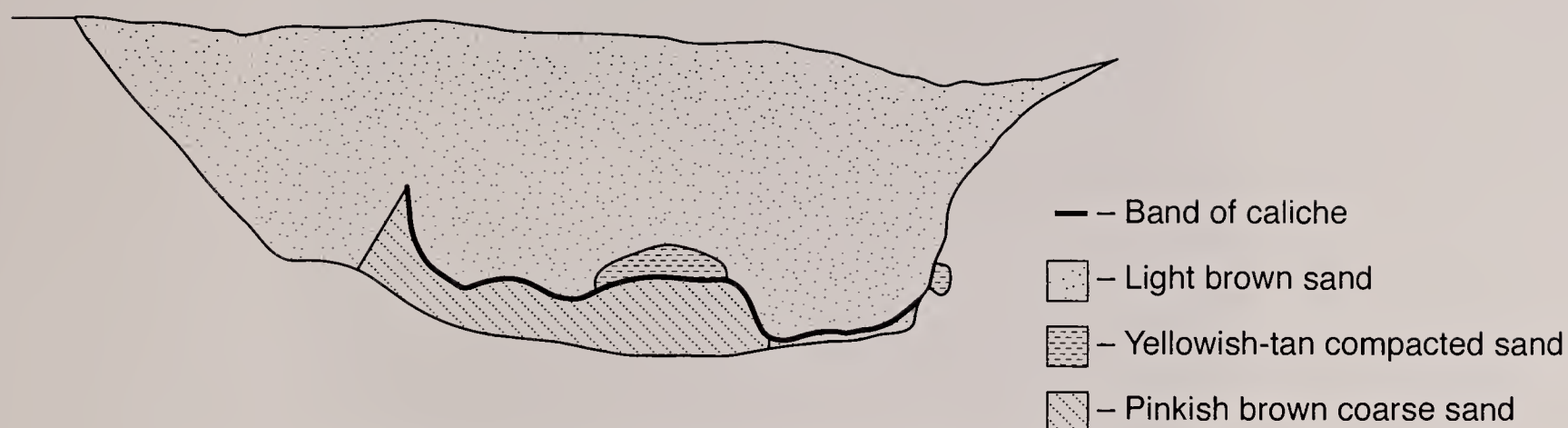


FIG. 31. Cemetery P, Sector B, profile of burial pit recently cleared by looters.

**SECTOR D**—Sector D is located north of Sector B and is relatively small, 30 × 40 m. This sector has been heavily looted, and numerous human remains are present, along with shell, textiles, and some ceramics.

**DISCUSSION: CEMETERY P**—Excavation at Cemetery P was an effort to identify areas of undisturbed burials. It was difficult to determine this given the extensive looting that had been done in this sector. No clear evidence of intact burials was found. Observation of a recently looted burial suggested one reason why it is difficult to identify individual burial pits at Cemetery P. The looter had discarded the bones of the individual and woven wrappings in the pit, but one side of the burial pit was still preserved. The pit had been excavated into the sand of the dune that covers the area and was not lined with adobes, rock, or any other material. Apparently, the burial bundle was placed in a pit in the sand and covered. The only indication of the burial pit was a thin brown crust of cemented sand grains that extended over the burial, observed in the profile of what remained of the pit (Fig. 31). This brown crust may have formed from moisture originally in the burial bundle, but whatever its source, the burial pit seems to be something like an eggshell and just as fragile, likely to be ground back into sand very shortly after it is broken open.

A fragment of gourd engraved with a standing figure was recovered from the surface of Cemetery P, and a small portion of the gourd was AMS dated to 2220 Cal B.C. (Fig. 32,

Table 10) (Haas et al., 2003). The forward-facing pose of the individual, headdress, extended arms ending in fingers or claws, the fanglike teeth, and large eyes are all elements found in later iconography, especially that associated with the Staff God (Demarest, 1981, pp. 43–69).

The presence of Late Archaic textiles (L. Haas, 2005) in the material recovered from the test unit at Cemetery CP, plus the radiocarbon date from the pyroengraved gourd fragment on the surface, points to the use of this cemetery during the Late Archaic. However, the extent or intensity of the Late Archaic use cannot be assessed on the basis of the work done to date.

### Potao (02PVGS-8)

Potao is located on the left margin of the Pativilca River, adjacent to the northwest edge of the community of Potao. The location of Potao is different from other Late Archaic site in this and neighboring valleys in that it is located on the floodplain, while the other large Late Archaic sites are on terraces or hills above the valley and always adjacent to active irrigation canals. Construction of houses and agricultural fields of the local community have heavily damaged Potao in recent years. Aerial photos suggest that there was originally a single main mound in the northwest portion of the site, with two long arms extending outward on each side in the form of a U (Fig. 33). Sectors A, B, and E appear to have been articulated. The mound



a



b



FIG. 32. Cemetery P incised gourd fragment.

in Sector C is not physically connected to any other, while the mound in Sector D is a natural feature, though the surface demonstrates evidence of early occupation. The southern arm has been covered with houses, while the plaza area between the two arms of the main complex is today a cultivated field. Local residents indicate that they have found artifacts during house construction along with charcoal and

mollusk fragments, though no ceramics have been reported. In aerial photos, it is possible to identify two additional mounds in Sector E that are no longer visible. According to local residents, one of the mounds was apparently an archaeological construction. During the leveling of these mounds, local residents report seeing numerous river cobbles, and some bone.



TABLE 10. Cemetery P radiocarbon dates from samples obtained in 2002.

Provenience	Material	Lab no.	Cal. B.C.	RCYBP	<sup>12</sup> C/ <sup>13</sup> C	Weight of sample (g)	Calibrated age range 1 sigma (68.3%) B.C.	Calibrated age range 2 sigma (95.4%) B.C.
Surface	Gourd fragment	ISGS-A-0332	2220	3789 ± 48	-28.1	.2	2289–2186 (71.3), 2184–2141 (28.7)	2402–2376 (3.2), 2352–2113 (87.8), 2100–2037 (9.0)

Sector A includes a platform mound 69 × 73 × 17 m completely constructed of rounded river cobbles. The mound faces northeast, with two levels of terracing around the sides. From the top of this mound, the rest of the site is easily visible, and on this upper surface, the tops of several walls made of angular stone are visible. The east side of the mound has collapsed slightly, revealing a small cut or profile in which a large number of mollusk shells can be seen in the construction fill of river cobbles and clay. On the surface of the mound are numerous river cobbles and mollusk shells, while a few ceramic fragments can be seen along the sides.

The surface is badly disturbed by the construction of a chapel on the peak of the hill (Fig. 34). A cement platform for altars was built halfway up the hill, and a path for processions winds up one side of the mound. Houses and corrals along the north, east, and southeast occupy the lower margin of the mound.

In Sector A, a profile was cleared in an area on the upper part of the western slope of the main mound. This locality was the best available for archaeological work, considering the other sectors were occupied by houses or corrals or in the case of Mound C, a later Ceramic period occupation.

SECTOR A: PROFILE 1—Profile 1 was located in Sector A, the main mound of the U-shaped structure, at the rear of the U. In this area, heavy machinery had removed a great deal of the upper portion of the mound. According to members of the community, this destruction was carried out more than 30 years ago, when the hacienda owner tried to build a house on the summit of the mound. Today, only a few pieces of foundation rock and clay in each of the corners of the mound mark the base of the structure. Heavy machinery reshaped the upper half of the mound to create a truncated pyramid with two levels. Screening the material from clearing Profile 1 yielded only a few mollusk valves, botanical remains, and a few fragments of ceramics. The profile fill also included modern cultural material, such as rectangular adobe bricks.

Profile 1 revealed extensive construction fill composed of medium- and large-sized cobbles and mortar that was relatively unstable, producing frequent collapse of the sides of the profile during clearing.

The following stratigraphic units were revealed during clearing of the profile at Potao (Fig. 35).



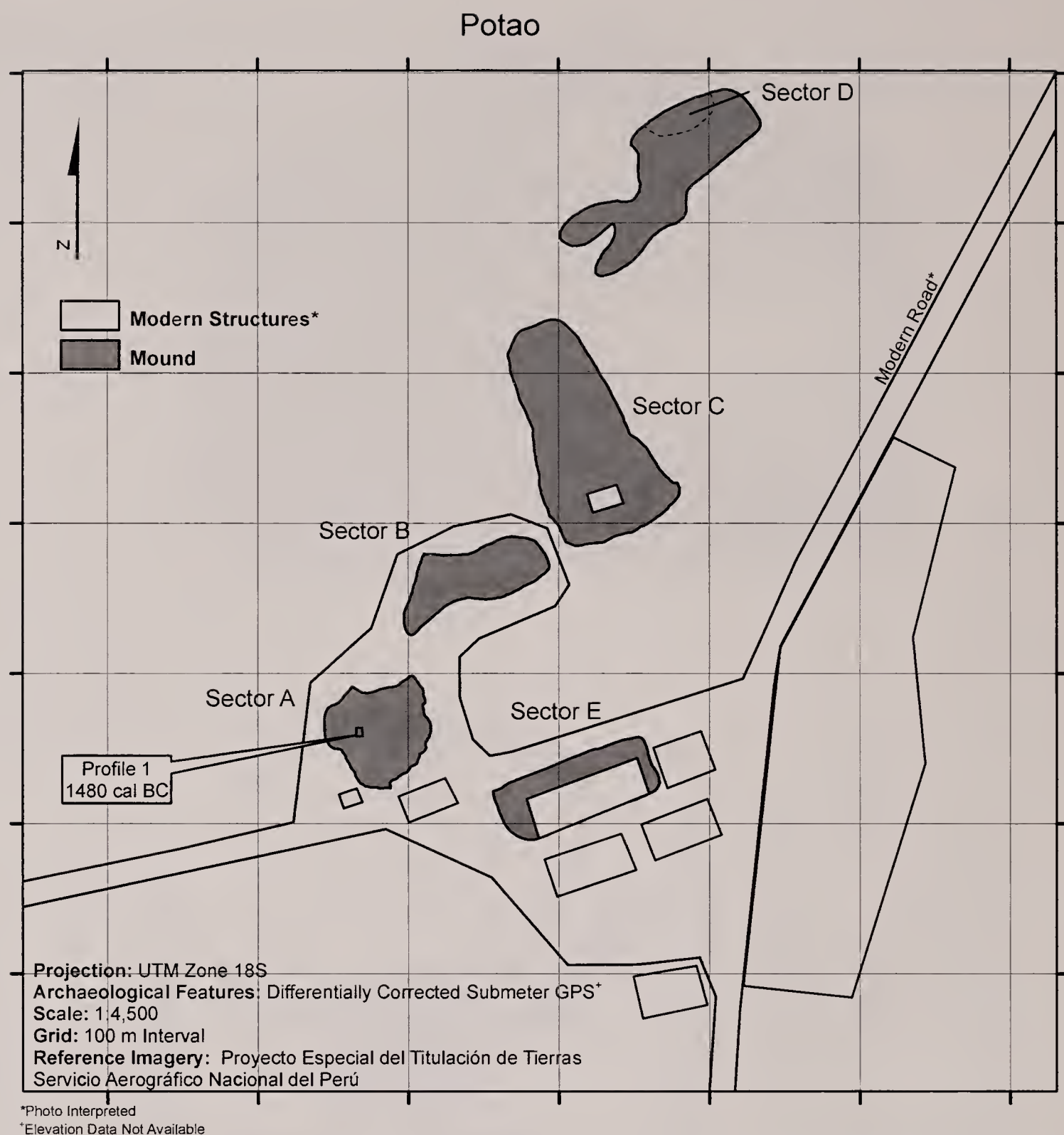


FIG. 33. Map of Potao showing mounds and other features, sectors, canals, roads and encroaching structures.

Layer 1 consisted of loose beige soil with abundant large and small cobbles. This layer was highly disturbed.

Layer 2 included unconsolidated beige soil with numerous large and small cobbles. An alignment of cobbles was visible in this layer.

Layer 3 continued with chunks of adobe in a loose mix of soil with medium and small cobbles. Two pockets of loose cobbles were identified in this layer, as was a pocket of loose angular rock. Each of these pockets could represent disturbance rather than a feature associated with mound construction, however.

Layer 4 included cobbles and clay mortar.

**Conclusions**—Analysis of these layers did not reveal undisturbed evidence of mound construction. The mix of materials best shows the mid- to late 20th-century attempt to remodel the mound into a site appropriate for house construction.

The alignment of cobbles in Layer 2 may be the remains of ancient construction, but further excavation would be necessary to be certain. Plant fibers and other botanical materials from the fill were recovered to obtain radiocarbon dates. A small sample of charcoal was collected for radiocarbon dating, yielding a date of 1480 Cal B.C. (ISGS-A429).

**SECTOR B**—Sector B is located to the north of Sector A and includes a long platform mound with a NE/SW axis that measures  $32 \times 85 \times 3$  m. The surface of this mound has been heavily damaged by modern construction, and corrals and animal pens largely cover it. No architectural remains such as walls are visible today. Little cultural material is present, only a few fragments of ceramics and numerous loose river cobbles that were used in the ancient construction.





FIG. 34. Photo of mound at Potao (J. Haas).

Longtime residents note that more than 30 years ago, the mound was modified with heavy machinery to level the upper surface. The original height of the mound was similar to that of the mound in Sector C, approximately 7 m high.

**SECTOR C**—Sector C is located to the northeast of Sector B and is separated from it by approximately 4 m of cultivated fields. Rectangular shaped with a NE/SW axis, it measures  $91 \times 159 \times 7$  m on the southeast, while the northeast corner is 4 m higher than the surrounding area. On the extreme southern corner of the site, the surface is covered with angular rock, while in the central part of this sector, there are numerous river cobbles. At the north end of the sector, there is a greater presence of sediment with river cobbles, and it is in this latter area where the greatest evidence of looting can be seen. At this end of the site, ceramics are visible on the surface, and adobe bricks can be observed in the disturbed areas. In the central area of this sector, large rectangular hollows are present in the mound surface. These are now largely filled in with loose river cobbles and were probably rooms oriented NE/SW. The west side of the mound has been altered by construction of storage areas for animal fodder, such as corn-stalks that are dried after harvesting. Looting has

damaged the northern margin of the sector, and the southern edge of the sector is covered with modern corrals.

**SECTOR D**—Sector D is located 15 m north of Sector C, on the north-central part of a natural mound of irregular form. The surface is covered with river cobbles, and although there are no architectural features present, the cobbles cover an area  $27 \times 38 \times 1.5$  m, suggesting that there was remodeling of the mound to create the appearance of a structure. From the proximity of the mounds in Sectors C and D, occupation of both probably began during the Late Archaic, with a later reoccupation.

**SECTOR E**—Sector E is located to the east of Sector A. Today it has been destroyed by the settlement of Potao. The main mound structure can be identified from aerial photos taken in 1970 and by the height of the center of the settlement compared to its surroundings. The mound in Sector E is likely to have had similar dimensions and orientation to that in Sector B. In the few exposed vertical surfaces, river cobbles set in clay are visible along with a few mollusk shells. No fragments of ceramics were visible, and the exposed profiles in the mound suggest the mound was Late Archaic.

**DISCUSSION: POTAO**—Clearing Profile 1 at Potao revealed that the Sector A mound is an







TABLE 11. Potao radiocarbon dates from samples obtained in 2002.

Provenience	Material	Lab no.	Cal. B.C.	RCYBP	$^{12}\text{C}/^{13}\text{C}$	Weight of sample (g)	Calibrated age range 1 sigma (68.3%) B.C.	Calibrated age range 2 sigma (95.4%) B.C.
Mound A, Profile 1	Charcoal	ISGS-A-429	1480	$3215 \pm 35$	-10.3	<5	1517-1487 (42.3), 1483-1444 (57.7)	1598-1588 (1.5), 1581-1568 (1.8), 1528-1410 (96.7)

The cobble construction of the Sector C mound also suggests an early occupation during the Late Archaic with an intensive reoccupation at a later date based on the presence of adobe bricks and burials with ceramics.

Vinto Alto (02PVGS-9)

Vinto Alto is located on the left margin of the Pativilca River, part of the town of the same name. The present community of Vinto Alto has expanded to cover much of the site and has caused serious damage. A contemporary cemetery is located in the area, which may have contained a sunken circular plaza, and houses have been constructed around the base of each mound. The site is composed of four sectors. Sectors A and B are two large mounds that are nearly side by side. Sector C, however, is a natural hill having two peaks (Fig. 36). One side of the hill was modified to construct a large open “atrium” area in the space between the two peaks. Sector D is a platform near Sector C (Fig. 37).

Because of their close proximity, Sectors A and B will be described together.

Sectors A and B each include platform mounds covered with both river cobbles and angular rock. Although they appear to constitute a single structure, they are in fact two distinct mounds. The base of several rooms can be seen on the top of each mound. Mound A is 74 × 85 × 23 m and Mound B 58 × 91 × 18 m in size.

On the summit of Mound A, there is a polished stela, or huanca, 2.6 m long, 85 cm wide at one end, 75 cm wide in the center, and 54 cm wide at the other end, a form reminiscent of the “lanzón” of Chavín de Huantar (Fig. 38). The stela is approximately 20 cm thick. At the base of the stone, there are marks that may be what remains of iconography, though these are much deteriorated. There are also circular indentations worked into the surface of the stone.

Similar to Carretería, the Sector A mound at Vinto Alto has been cut by a canal around the base of the mound on the east side. Houses also cover a large area on the east side of the mound, and no prehispanic structures or features are visible. On the west side of the two mounds is an accumulation of aeolian sand, while on the surface of the two mound, a few flake fragments can be observed.

A room constructed of cement block that functioned as a small chapel in the past was





FIG. 36. Photo of twin peaks at Vinto Alto (J. Haas).

constructed on the summit of the mound in Sector B. This construction destroyed whatever architecture might originally have existed on the summit.

In Sector A, a trench 3 m wide and 6 m long was cleared to remove disturbed material at the base of the principal mound where it had been cut by heavy machinery. This area was designated Profile 2. From this trench, plant fibers were collected for radiocarbon dating.

In Sector C, a 3 × 5-m trench in the existing looter's holes in the atrium area was cleared so that Profile 1 could be drawn.

**SECTOR A: PROFILE 2**—This profile was located on the south side of the principal mound in Sector A, near the canal that forms the boundary between the site and the local community. This 3 × 6-m unit extends toward the summit of Mound A from a point where Mounds A and B meet. It does not reach to the top or the base of the mound and is situated approximately in the center of one side of the mound. A large quantity of loose rock was removed to clear an *in situ* profile and to look for walls and other architectural elements. A variety of artifacts were recovered, including charcoal, botanical materials (a burned wood fragment and a wood fragment), mollusks, and lithics.

Layer 1 included loose material on the surface, fine dry beige silt, and sand mixed with cobbles. Two samples of shicra in secondary context were collected from this layer. One of these was dated 2480 Cal B.C. (GX 30121).

Layer 2 was more compact than Layer 1 and consisted of yellowish-gray sediment. Cobbles and angular rock were present in this layer.

Layer 3 included shicra in primary context along with cobbles and angular rock. Two shicra samples from this context were dated to 2480 Cal B.C. (ISGS-5287) and 2540 Cal B.C. (ISGS-5392) (Fig. 39A, B, C).

**Conclusions**—There were subtle signs of construction in the cleared profile, such as faced stone, angular rock in an alignment, an alignment of cobbles, and shicra at the base of the wall identified near the base of the profile. However, these were not easily related to each other because of the disturbance in this area. The area is best viewed as a single phase of deposition that has been disturbed.

The frequency of lithics in material cleared in Profile 2 was high compared to other localities; excavators identified hammerstones, cores, and tools (retouched pieces). Fragments of burned rock were also present in this area. Combined with the absence of ceramics, these data suggest that Mound



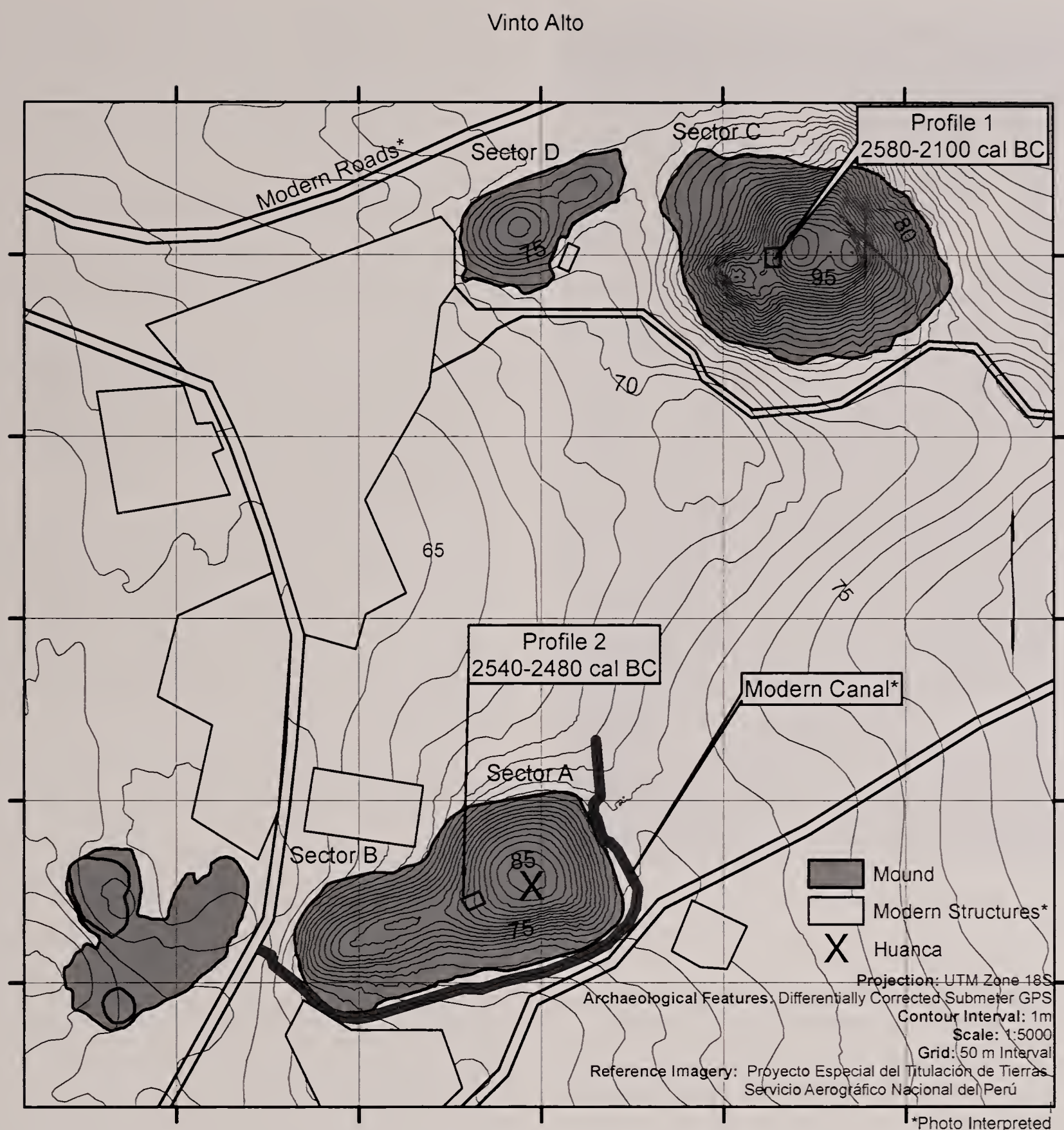


FIG. 37. Map of Vinto Alto showing mounds and other features, sectors, canals, roads and encroaching structures.

A was a Late Archaic occupation. Radiocarbon analysis of three samples of annual plant fiber supports this conclusion. Dates from Mound A of  $3970 \pm 70$ ,  $3970 \pm 70$ , and  $4010 \pm 70$  RCYBP ( $\sim 2480$ ,  $2480$ , and  $2540$  Cal B.C.) are highly consistent. Two different laboratories conducted these analyses, supporting the cluster of dates as more than an artifact of analysis (Table 12).

**SECTOR C**—Located approximately 200 m east of the present-day settlement of Vinto Alto, Sector C includes a large natural mound that has been modified and built upon. The hill is  $86 \times 106$  m at the base, which has been transformed into a mound through construction of a series of retention walls of angular rock though some

river cobbles are also present in the construction fill. On the summit are rooms and a central atrium that measures  $15 \times 17$  m. The atrium is still visible and faces east and west, each direction overlooking a lateral platform. All the construction within the atrium is oriented toward the north, however.

In the atrium, the remains of plastered walls can be seen, while in the exposed profiles, the construction fill can be identified (Fig. 40). The atrium has been seriously affected by the collapse of the walls around its margins. The use of shicra as construction material and the absence of ceramics on the surface is part of the Late Archaic pattern.





FIG. 38. Huanca atop Mound A at Vinto Alto (J. Hass).

Most of the remains of the principal mound were in good condition, with undisturbed patches on the summit and the slopes. In one area, looters excavated a large hole and left walls and construction fill exposed, while a house occupied one of the platform mounds adjacent to the main mound and burro and pig corrals.

**SECTOR C: PROFILE 1**—In Sector C, existing looter's holes were cleared so that a profile could be drawn. This profile, located on the edge of the atrium, was designated Profile 1, an area  $3 \times 5$  m. The plant fibers visible in the profile were collected to obtain radiocarbon dates. The place where Profile 1 was cleared had been identified during earlier examination of the site as an area where erosion and looting had been exposed at the top of the Sector C mound. A floor superimposed over another could be seen, cut through by later activity. The area had been heavily damaged by a large looter's hole reaching to the bedrock below mound construction. Later this large excavated area was used as a goat corral, and the surface was liberally covered with

caprine feces. However, remains of shicra bags could be observed, and some of these provided material for radiocarbon dating. Clearing this exposed profile permitted us to record several different layers of construction fill and architectural elements.

The following layers were recognized (Fig. 41):

Layer 1: A gray-brown layer composed of loose sediment with abundant rocks 5–10 cm in size.

Layer 2: A layer of loose, gray-brown sediment with numerous small rocks and pebbles less than 5 cm in size.

Layer 3: Loose gray-brown sediment mixed with gravel.

The four deposits distinguished here are part of the construction fill and show continual modification and remodeling of the area. Four occupation phases were revealed in the cleared profile.

Phase 1, the earliest visible in Profile 1, includes Floor 6 and two subsequent replasterings, Floors 5 and 4.

Phase 2 included the fill over Floor 4, which was topped with Floor 3. A base of rock may have been placed over the fill and under the floor.

Phase 3 includes a shallow layer of fill over Floor 3 and Floors 1 and 2. Floor 1 is a replastering of Floor 2.

Phase 4 includes the materials that accumulated over the floors at a later time. Much of this material covered the floors after looting, as the cleared profile shows the six exposed floors under layers of loose fill.

**Conclusions**—Although more than seven different moments in time are represented by the floors and layers of fill in Profile 1, they can best be grouped into four distinct phases of occupation. However, additional excavation might show that Floor 3 lies directly below Floors 1 and 2, making them part of Layer 3 rather than a separate layer. The presence of at least six floors in a single profile points to extensive remodeling and reuse of this structure. The succession of floors in the same area is also indicative that there was continuity in the form and function of the structure from one rebuilding to the next. This pattern is in marked contrast to the remodeling done at Pampa San José, for example, where the different phases of construction were much more discontinuous and involved structural reorganization of the building.

Three samples of shicra bags from different proveniences in Profile 1 were submitted for



PANC – 2002  
Vinto Alto, Sector A  
Profile 2  
East Profile

1 m

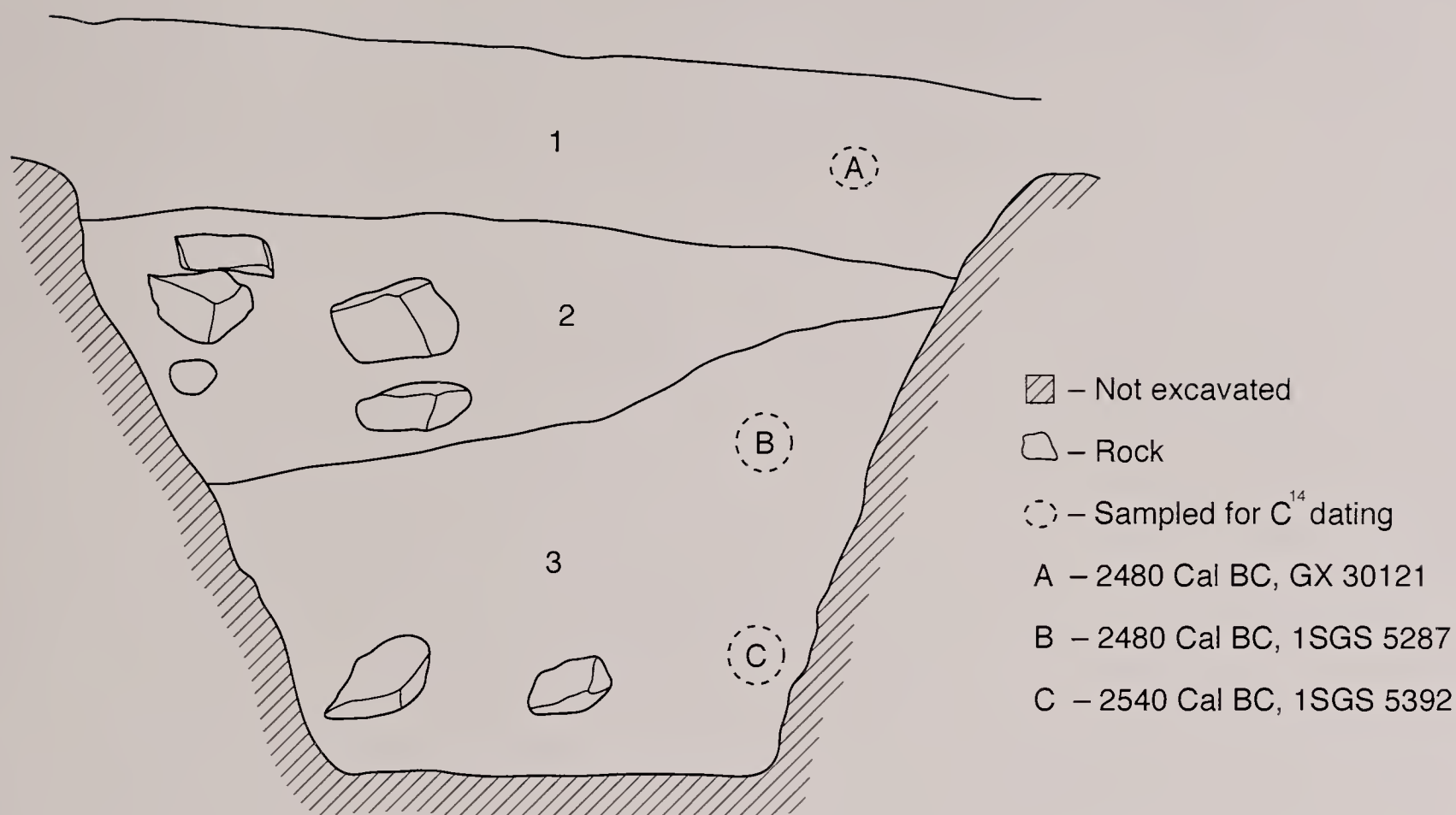


FIG. 39. Sector A, Profile 2 at Vinto Alto.

radiocarbon analysis and yielded dates of 2580 to 2100 Cal B.C. (Table 12). Either this wide range of dates may indicate a long period of building, rebuilding, and reoccupations of this structure, or the date of 2100 with a wide margin of error may be in error, skewing the overall distribution. Three additional samples of shicra bags were collected on the summit of Sector C. These appeared to be *in situ* but were exposed on the surface outside the area of the cleared profile (Table 12G, H, I). The dates obtained were tightly clustered at 2400, 2410, and 2420 Cal B.C., suggesting there was a distinct episode of construction in Sector C at this time, as well as both earlier and later, based on the dates from Profile 1.

Sector D is located 200 m west of Sector C. It includes a large platform some 65 m long, ranging from 25 to 35 m wide. The surface is covered with river cobbles and angular rock. From the architecture and the absence of ceramics on the surface, this sector dates to the Late Archaic. The platform has been affected by construction of animal pens around the base and by construction of a small chapel on the summit.

DISCUSSION: VINTO ALTO—Testing at Vinto Alto revealed long-term use of the site as indicated by numerous remodelings of the surface of the atrium shown in Profile 1. The exposed profiles yielded a consistent set of dates ranging from 2580 to 2100 Cal B.C., and seven of the nine dates ranged from 2580 to 2410 Cal B.C. This is the earliest cluster of dates from among the sites tested and suggests that Sectors A, B, and C were all being modified by 2500 Cal B.C. and that activities continued at the site until at least 2400–2100 Cal B.C.

### Discussion: Pativilca Valley

Seven of the sites tested by PANC in 2002 included monumental architecture. Of these, four were associated with sunken circular plazas (Table 13): Upaca (02PVGS-1), Punta y Suela (02PVGS-2), Pampa San José (02PVGS-3), and Carretería (02PVGS-4). These four sites are located on the right bank of the Pativilca River. On the right margin of the valley, we also identified sites with large residential areas and a substantial architectural complex. Upaca and



TABLE 12. Vinto Alto radiocarbon dates from samples obtained in 2002.

Provenience	Text and illustration location	Material	Lab no.	Cal. B.C.	RCYBP	$^{12}\text{C}/^{13}\text{C}$	Weight of sample (g)	Calibrated age range 1 sigma (68.3%) B.C.	Calibrated age range 2 sigma (95.4%) B.C.
Mound A, Profile 2	A	Mixed plant fibers	GX-30121	2480	3970 $\pm$ 70	-12.8	18	2575-2508 (35.9), 2504-2401 (52.2), 2378-2350 (11.9)	2839-2817 (1.4), 2665-2646 (1.3), 2642-2277 (95.2), 2252-2229(1.4), 2221-2206 (.7)
Mound A, Profile 2	B	Mixed plant fibers	ISGS-5287	2480	3970 $\pm$ 70	-16.8	10	2575-2508 (35.9), 2504-2401 (52.2), 2378-2350 (11.9)	2839-2817 (1.4), 2665-2646 (1.3), 2642-2277 (95.2), 2252-2229 (1.4), 2221-2206 (.7)
Mound A, Profile 2	C	Fiber bag	ISGS-5392	2540	4010 $\pm$ 70	-14.1	13	2831-2821 (2.6), 2661-2650 (3.0), 2624-2456 (91.6), 2624-2456 (2.9), 2418-2406 (2.9)	2860-2810 (6.0), 2653-2722 (2.2), 2701-2328 (90.7), 2324-2307 (1.1)
Mound C, Profile 1	D	Fiber bag	Beta-177323	2100	3700 $\pm$ 110	-13.4	15	2278-2252 (6.6), 2230-2220 (2.4), 2207-1937 (89.7), 1930-1923 (1.4)	2457-2418 (2), 2407-1869 (94.3), 1843-1810 (2.2), 1801-1776 (1.5)
Mound C, Profile 1	E	Fiber bag	GX-30124	2330	3860 $\pm$ 60	-15.7	18	2456-2420 (17.4), 2405-2280 (67.4), 2251-2231 (10.4), 2219-2209 (4.9)	2471-2189 (95.3), 2180-2142 (4.7)
Mound C, Profile 1	F	Fiber bag	ISGS-5277	2580	4040 $\pm$ 70	-12.7	18	2836-2818 (6.5), 2664-2646 (6), 2637-2467 (87.5)	2867-2804 (11.1), 2782-2767 (1.0), 2763-2716 (5.6), 2712-2428 (79.3), 2424-2403 (1.6), 2375-2353 (1.4)
Mound C, summit NE	G	Fiber bag	ISGS-5394	2410	3930 $\pm$ 70	-12.7	18	2251-2541 (4.4), 2491-2304 (95.6)	2617-2612 (.4), 2581-2201 (99.6)
Mound C, summit NE	H	Fiber bag	Beta-177324	2400	3930 $\pm$ 60	-11.4	18	2584-2543 (1.7), 2489-2478 (5), 2474-2331 (87.4), 2322-2309 (5.8)	2575-2508 (12.6), 2504-2276 (82.6), 2253-2229 (2.9), 2221-2206 (1.6)
Mound C, summit NW	I	Fiber bag	GX-30123	2420	3940 $\pm$ 70	-13.0	18	2559-2536 (10.4), 2530-2524 (2.3), 2496-2334 (83.3), 2320-2310 (3.9)	2619-2610 (.8), 2597-2590 (.5), 2583-2266 (92.6), 2263-2203 (6.1)





FIG. 40. Adobe and clay-plastered floors visible in looted area of Sector C, Vinto Alto.

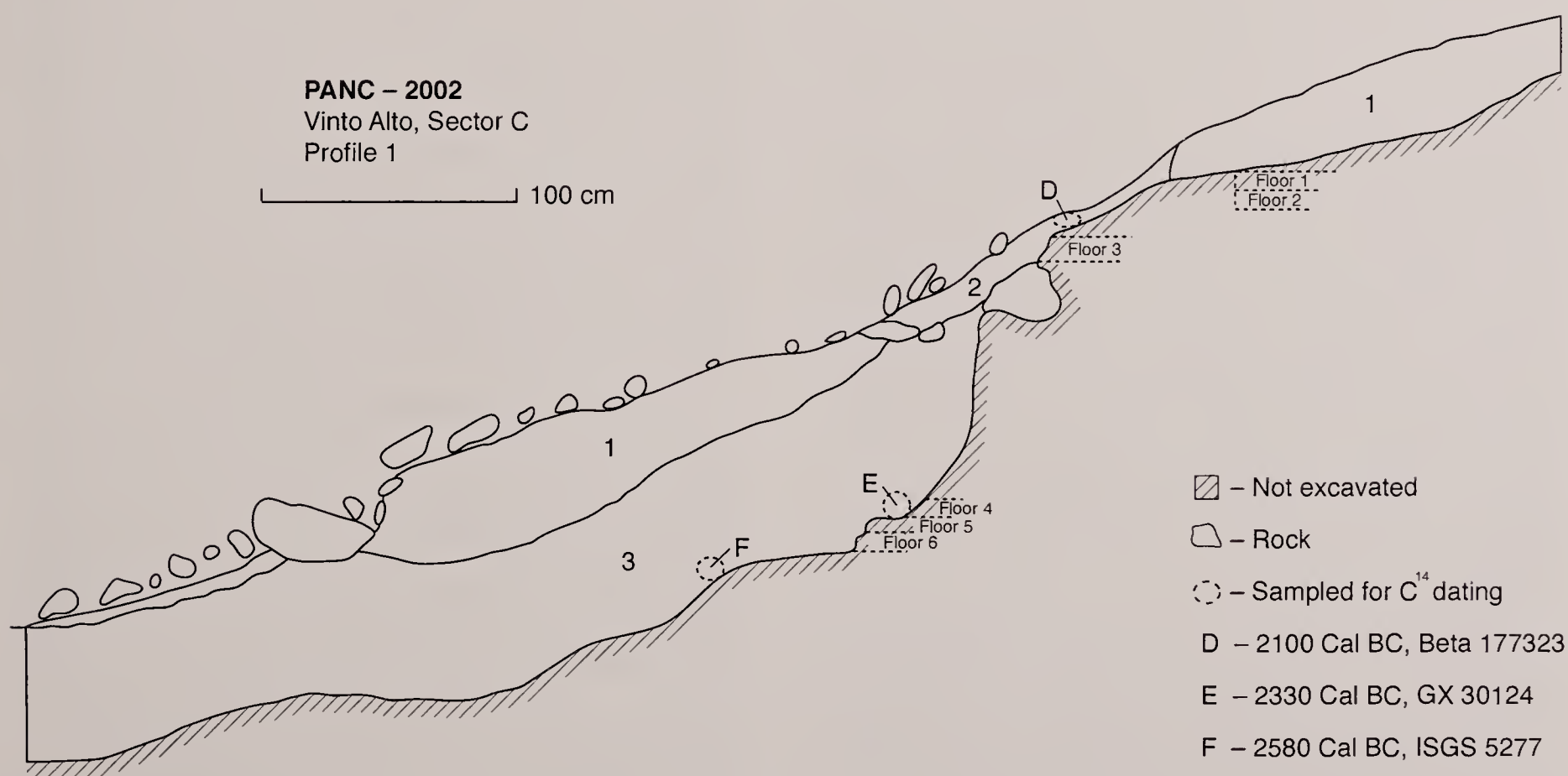


FIG. 41. Sector C, Profile 1 at Vinto Alto.



TABLE 13. Features of Late Archaic sites in the Pativilca Valley.

Site	Monumental architecture	Circular plaza	U-shaped layout	Bank of river
Huayto	Y	?	Y	R
Pampa San José	Y	Y	N	R
Punta y Suela	Y	Y	N	R
Upaca	Y	Y	N	R
Carretería	Y	Y	N	R
Vinto Alto	Y	?	N	R
Los Olmitos	Y	?	?	L
Potao	Y	N	Y	L
Cemetery P	N	N	N	L
Cerro R	N	N	N	L

Punta y Suela both include two sunken circular plazas associated with large platform mounds.

On the left margin, however, we found the largest structure in the Pativilca Valley, Vinto Alto (02PVGS-9), Sector A, the principal mound, which measured 23 m high. Also on the left margin of the river are Cemetery P (02PVGS-7) and Cerro R (02PVGS-6), both large cemeteries that have been heavily looted, yet these extensive funerary areas include very few ceramic fragments. It was during investigation at these sites that two fragments of pyroengraved gourd were recovered bearing images that may represent an ancient Andean divinity. Carbon-14 analysis of one of these fragments yielded a calibrated date of 2220 B.C. (Haas et al., 2003).

We can confirm that the most important site and one that is clearly representative of the Late Archaic period in the Pativilca Valley is the site of Upaca. Its great antiquity, large extension, the volume of its mounds, and the presence of two sunken circular plazas indicate that it was a center of great importance within the valley. Other sites of primary importance include Vinto Alto and Punta y Suela. The site of Vinto Alto also yielded an early date from well-preserved platform mounds. Punta y Suela included extensive residential areas with abundant botanical remains, which will assist us in reconstructing the diet and the range of plant foods consumed. The radiocarbon dates from this site suggest it is also of considerable antiquity (Table 14).

Pampa San José has provided valuable data on construction of its mounds. By recording in detail the very extensive profiles exposed by a large looter's pit in the summit of the mound, we took advantage of a unique opportunity to observe construction techniques and the contin-

ual remodeling, construction, and labor investment in these structures.

The recent investigations in the Pativilca Valley described here have revealed a pattern of large sites with monumental architecture that were occupied during the third millennium B.C. Sites of this type are concentrated in three valleys in an area of only 1,200 km<sup>2</sup>. Further, these sites are directly associated with the introduction of irrigation in the area and rapid transition from a hunting-and-collecting way of life to an agricultural one. In what appears to be a situation of truly "pristine" cultural development, this complex of sites provides a window into understanding how leaders came to exercise power over their respective populations. For this, we need to understand the role of agriculture, warfare, and religion in the origin and development of power relations during this extraordinary period of early political change.

These initial data from the Norte Chico demonstrate that it was a center of intensive cultural development during the period from 3000 to 1800 B.C. Kosok (1965), Burger (1992), Moseley (2001), and others have recognized and emphasized the extraordinary density of the Late Archaic and aceramic centers of the Norte Chico with monumental architecture. The radiocarbon dates span a much longer period but cluster between 2700 and 1800 B.C. (Table 14).

A rectangular, stepped pyramid shape characterized the majority of the large mounds in the region. A broad stairway down the front of the pyramid conducted people from an open atrium on an upper terrace to a sunken circular plaza. Additional stairs and passageways led into other rooms and structures on the highest level of the mound, a pattern that can be reconstructed from the information available from excavations at Caral (Shady & Levya, 2003). Indications on the surface correspond in general to the system of



TABLE 14. Summary of dates from Late Archaic sites in the Pativilca Valley.

	Sites							
	UPC	PYS	POT	PSJ	VTA	CAR	HYT	CP
CAL B.C.								
100								
200	X							
300								
400								
500								
600		X						
700		X						
800	X							
900								
1000								
1100	XXX							
1200								
1300								
1400		X	X					
1500								
1600								
1700								
1800		X		X				
1900				XX				
2000								
2100	X			XX	X	X		
2200	XX	X		X			XX	X
2300	XXX				X			
2400		X			XXXXX			
2500					XXX			
2600	X							
2700	X							
2800								
2900								
3000								
4000								
5000		XX						
6000		X						
7000								
8000								
9000		X						

stairways and passageways described by Tom Pozorski (1982) at Caballo Muerto. Generally there is an open area at the lowest level, the sunken circular plaza, followed by a suggestion of stairs and passages that progressively narrow access to the higher sections of the platform mounds. Pozorski has interpreted this pattern as an indication of increasingly restricted access to a succession of religious rituals. A large number of people observed or participated in activities held in the open circular plazas, but a smaller number went up the pyramid to the atrium, and only a few people entered the sacred interior spaces at the top of the mound.

Among the 30 large sites recorded in the Norte Chico region, there is some variability in the general pattern. Some sites, like Aspero, do not

have circular plazas, some, like Lurihuasi, do not have several large mounds but a single tightly-packed mass of mounds. Some sites have only a single mound, while some mounds do not have recognizable features, such as an "atrium." Nevertheless, the consistent pattern is one in which each class of religious or ceremonial activity took place in areas that would be visible to a large audience. A small segment of the population had access to a second layer of the ceremony, while an even smaller group would have participated in a third layer of ceremony. This pattern of open presentation of religious activities followed by restricted access to religious works in interior spaces is a manifestation of the ideological base of power in the Late Archaic Norte Chico region.



During the investigations carried out during June, July, August, and September 2002 by the PANC, 10 prehistoric sites were identified as possibly belonging to the Late Archaic period, and nine of these were targeted for testing. The search for sites in 2002 was very limited in scope and consisted primarily of reviewing air photos and driving the valley roads looking for the telltale remains of stone platform mounds. Surface evidence, such as the plan of mounds and plazas, construction material, and a general absence of ceramics on the surface and in exposed profiles of disturbed areas, demonstrated that these sites dated to the Late Archaic or possessed an occupation from this period. A complete inventory of possible Late Archaic sites must await the results of a comprehensive survey of the valley (Perales, Pativilca V survey report, 2006).

Six of the seven major centers with large scale ceremonial architecture yielded radiocarbon dates between 2700 and 1800 Cal B.C. An eighth site, Los Olmitos, with similar characteristics and a lack of ceramics in a number of exposed profiles, could not be tested but is likely to have a Late Archaic component. One of the two cemeteries identified yielded a Late Archaic date for a surface artifact—a pyroengraved gourd—and similar artifacts were found on the surface of the second cemetery.

Altogether, the very preliminary survey and testing firmly established a significant Late Archaic occupation in the Pativilca Valley. Kosok (1965) was the first to point out the potential importance of sites in Pativilca, and Williams (1972, 1978–1980, 1985) pointed out the presence of the pattern of platform mounds and sunken plazas. It was Engel (1987) who was the first to propose that there were a number of sites in this valley that dated to what he called the “Cotton Preceramic,” the equivalent of the term Late Archaic as used in this monograph. The work of the PANC expands on this antecedent work and effectively confirms that the Pativilca Valley was a major center of large ceremonial centers with terraced platform mounds and associated sunken circular plazas on the coast of Peru during the Late Archaic. The presence of this group of centers in Pativilca fits a similar pattern found in the Fortaleza Valley to the north (Vega-Centeno et al., 1998; Haas et al., 2005; Vega-Centeno, 2005) and the Supe Valley (Williams & Merino, 1979; Shady et al., 2003) to the south. Recent survey has shown the presence of yet another group of Late

Archaic sites in the Huaura Valley, just south of Supe (Nelson & Ruiz, 2005).

As is the case in all of these valleys of the Norte Chico region, the Pativilca Late Archaic sites are close together and often visible from one to the other, such as Pampa San José to Carretería. They are all concentrated in an area of only about 70 km<sup>2</sup>. The close proximity of these sites to each other has interesting implications in terms of possible intersite relations as well as raising pressing questions in terms of chronology. The physical placement of these sites as well as their proximity points to a lack of any kind of direct conflict or warfare (Haas et al., 2005). The sites are positioned on open terraces next to the river floodplain. Sites such as Upaca and Punta y Suela are immediately adjacent to lines of foothills that would have provided ideal assault positions for attacking enemies (Keeley, 1996; Haas, 2001), and the other sites are open to attack on all sides. These sites also lack any kind of defensive walls, lookouts, redoubts or hilltop fortifications. There are no signs of valleywide defensive features, such as strategic fortifications at points where the valley narrows as it comes down from the mountains. Other access routes into the valley from side quebradas also lack defensive walls or fortifications. Overall, in the Pativilca Valley, there are no hallmarks of conflict or warfare at any level. The people in this area were simply not concerned about attack from either their neighbors or outsiders.

If the different Late Archaic centers in the Pativilca Valley were not at war with each other, what was the nature of intersite relationships? Although there are many possibilities, there are three broad alternatives.

First, Shady (2003a,b,c, 2004) has proposed that all the Late Archaic sites in the Norte Chico were under the direct hegemony of Caral in the Supe Valley, which she maintains was the capital of a Late Archaic state.

Second, there is the possibility that the Late Archaic sites in the Pativilca Valley and perhaps even the Norte Chico as a whole were in some kind of peaceful alliance or confederacy.

Third is the possibility that each of the Late Archaic sites in the Pativilca Valley was an independent minipolity members of which were in competition with each other for members or participants by means of cyclical ceremonial activities.

At this stage of regional research, there is no body of empirical evidence to either support or



refute any of these alternatives. There is no evidence at all that the Pativilca sites were somehow under the hegemony of Caral or any other site and no indication that Caral was any more or less important regionally than any number of other large sites, such as Punta y Suela, Pampa San José, or Vinto Alto. Caral may be in better *condition* than these sites, but it is not larger, nor does it have larger monumental architecture. At the same time, there is also no evidence that the people of these sites were in formal or informal alliances or confederacies with each other. Neither is there indirect evidence for pressures that might forge such alliances or confederacies, such as regional warfare or large-scale, valleywide irrigation systems. As with the other two possibilities, there is scant support for the third alternative of competition between “peer polities” (Renfrew & Cherry, 1986; Creamer et al., 2006). The only indirect indication of possible competition is the construction of so many large mounds at sites so close to one another. It is also interesting to note that the mounds are constructed to maximize their apparent size. Each presents a taller “front” to the side facing out into the valley. Thus, at Pampa San José, for example, the side of the main mound facing the valley is several meters taller than the side facing in to the circular plaza. There does seem to be some indication that the size of the mounds was important, possibly for intersite political posturing. Elsewhere, the authors of this manuscript have made a more expanded case for the independent polity model (Haas & Creamer, 2006).

The biggest problem with systematically testing any and all hypotheses about intersite relationships is establishing a solid valleywide and regional chronology. PANC has submitted 29 samples for radiocarbon dating from eight sites in the Pativilca Valley. While this has effectively established that these sites date to the 1,200-year period between 3000 and 1800 B.C., they do not establish with certainty whether these sites were contemporaneous with each other. For example, most of the sites have radiocarbon dates from the 100-year period between 2200 and 2100 Cal B.C. (3775 and 3700 RCYBP). Were these sites all occupied contemporaneously during this 100-year period? Because of the statistical variability inherent in radiocarbon dating, it is not possible to answer this question. On the one hand, it is possible that all the sites were occupied for the entire 100 years; on the other hand, it is equally possible that sites were occupied for only a portion of this century or in fact that none of the sites were

occupied at all during this century (because of the broad range of potential variability at a 95% confidence interval). All these scenarios have major implications in terms of potential intersite relationships. Was there one site occupied at any given time or five sites all occupied at the same time? The dates available at this time are simply inadequate to definitively address this problem.

During the Late Archaic in the Norte Chico, in the absence of chronologically sensitive ceramics or any other type of artifact (with the possible exception of textiles; L. Haas, 2005), firm dating of the occupation represents both a methodological and a theoretical challenge. Addressing the broad and extremely interesting theoretical questions about the origins of the first complex polities to arise in the Andes. A solution is going to require extraction and analysis of radiocarbon samples on an order of magnitude that is currently unprecedented in the region. Recent research at Chavín de Huantar, where hundreds of radiocarbon samples were collected to determine the construction sequence of this single site (Kembel, 2001; Kembel & Rick, 2004), demonstrates the need for this kind of dating and the value that can be derived from such analysis.

The Late Archaic archaeological record of the Pativilca Valley makes up a critical component of the emergence of an identifiably Andean civilization in the Norte Chico region of the Peruvian coast in the third millennium B.C. Unfortunately, these important archaeological resources have suffered greatly through modern agriculture, construction, and vandalism in the past 50 years. At least 50% of each and every site has been completely destroyed since the 1940s, and all of them continue to be immediately threatened by the expansion of fields, housing, and roads. Community education programs, a local museum in the town of Pativilca, and limited tourism development plans are currently being initiated to allow the people of the valley to play a more active role in the long-term preservation of these important parts of Peru’s ancient cultural patrimony.

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#### ***Field Crew for 2002 Field Season:***

Mario Advincula	
Carmela Alarcón	Micaela Alvarez
Carlos Escobar	Jesus Holguín
Felipe Libora	Veronica Ortiz
Kit Nelson	Lyra Haas
David Meyer	James Duncan Sr.
Teresa Chun	Rebecca Osborn
Rebecca Bria	Dan Corkill
Eric Hubbard	Lillian Haas
Tana Ratana	Vanessa Doran
Guillermo Galvez	Eugenio Galvez
Santos Bardales	Maximino Bardales

#### ***Barranca Crew for 2002 Field Season:***

Gaim Byrne	Esperanza Natividad Carpio
Miguel Loo	Lili
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## **Literature Cited**

- ADVINCULA, MARIO. 2005. Análisis de Arquitectura Monumental Temprana en el Norte Chico: El Precerámico Tardío en los valles de Pativilca y Fortaleza. Paper presented at the 70th annual meeting of the Society for American Archaeology, Salt Lake City, UT.
- ALARCON, CARMELA. 2005. Evidencias Botánicas Durante el Precerámico Tardío en el Norte Chico de Perú. Paper presented at the 70th annual meeting of the Society for American Archaeology, Salt Lake City, UT.
- BILLMAN, B. 1999. Reconstructing prehistoric political economies and cycles of political power in the Moche Valley, Peru, pp. 131–159. *In* Billman, B. and G. M. Feinman, eds., *Settlement Pattern Studies in the Americas: Fifty Years since Virú*. Smithsonian Institution Press, Washington, DC.
- . 2001. Understanding the timing and tempo of the evolution of political centralization on the central Andean coastline and beyond, pp. 177–204. *In* Haas, J., P. ed., *From Leaders to Rulers*. Kluwer Academic/Plenum Publishers, New York.
- BIRD, J., AND J. HYSLOP. 1985. The Preceramic Excavations at the Huaca Prieta, Chicama Valley, Peru. *Anthropological Papers of the American Museum of Natural History* 62(1): Pt. 1.
- BONAVIA, D. 1982. Precerámico Peruano, Los Gavi-lanes: Mar, Desierto y Oasis en la Historia del Hombre. COFIDE and Instituto Arqueológico Alemán, Lima, Peru.
- . 1991. Perú, hombre e historia: De los orígenes al Siglo XV. Edubanco, Lima, Peru.
- . 1993–1995. La domesticación de las plantas y los orígenes de la agricultura en los Andes Centrales. *Revista Histórica* 38: 77–107.
- BRIA, REBECCA. 2004. A Persistent Frontier: External Influences and Local Traditions in the Pativilca Valley Peru as Reflected in Ceramic Style. Unpublished M.A. thesis, Anthropology Department, Northern Illinois University, De Kalb, IL.
- BURGER, R. 1987. The U-Shaped pyramid complex, Cardal, Peru. *National Geographic Research* 3(3): 363–375.
- . 1992. Chavin and the Origins of Andean Civilization. Thames and Hudson, London.
- BURGER, R., AND L. SALAZAR-BURGER. 1991. The second season of investigations at the Initial Period center of Cardal, Peru. *Journal of Field Archaeology* 18(3): 275–296.
- CARLSON, K., AND N. CRAIG. 2005. Late Preceramic Mound Site Locational Patterning in the Norte Chico of Coastal Peru: A GIS Approach. Paper presented at the 70th annual meeting of the Society for American Archaeology, Salt Lake City, UT.
- . 2006. Late Preceramic and Initial Period Settlement Dynamics in the Huaura Valley, North Central Coast, Peru: A GIS-Based Locational Analysis. Paper presented at the 71st annual meeting of the Society for American Archaeology, San Juan, Puerto Rico.
- CHUN, TERESA. 2003. Preceramic Circular Plazas in the Norte Chico, Peru. Unpublished M.A. thesis, Anthropology Department, Northern Illinois University, DeKalb, IL.
- CREAMER, W., A. RUIZ, AND J. HAAS. 2006. Late Archaic Regional Organization in the Norte Chico. Paper presented at the 71th annual meeting of the Society for American Archaeology, San Juan, Puerto Rico.



- CORDOVA HERRERA, G. M. 2001. Informe Final Proyecto de evaluación arqueológica línea de transmisión 66KV Paramonga—Huarney. Copy on file, Instituto Nacional de Cultura, Lima, Peru.
- DEMAREST, A. 1981. Viracocha: The Nature and Antiquity of the Andean High God. Peabody Museum of Archaeology and Ethnology, Cambridge, MA.
- DILLEHAY, T., J. ROSSEN, AND P. J. NETHERLY. 1997. The Nanchoc tradition: The beginnings of Andean civilization. *American Scientist*, January–February: 46–55.
- DILLON, M. O., M. NAKAWAKA, AND S. LEIVA GONZALES. 2003. The lomas formations of coastal Peru: Composition and biogeographic history, pp. 1–9. *In* Haas, J. and M. O. Dillon, eds., *El Niño in Peru: Biology and Culture over 10,000 years*. Fieldiana Botany, n.s. **43**, Publ. 1524.
- DUNN, S., AND A. HEATON. 2005. Hard to Find Tools: Preceramic Lithics of the Norte Chico Region, Peru. Presentation at the 70th annual meeting of the Society for American Archaeology, Salt Lake City, UT.
- ENGEL, F. 1957. Sites et établissements sans céramique de la côte Péruvienne. *Journal de la Société des Américanistes* **46**: 67–155.
- . 1963. A Preceramic Settlement on the Central Coast of Peru: Asia Unit 1. *Transactions of the American Philosophical Society*, n.s. **53**, Pt. 3.
- . 1987. De las begonias al maíz: Vida y producción en le Perú antiguo. *Ediagraria*, Universidad Agraria La Molina, Lima, Peru.
- FELDMAN, R. 1980. Aspero, Peru: Architecture, Subsistence Economy and Other Artifacts of a Preceramic Maritime Chiefdom. Ph.D. dissertation, Department of Anthropology, Harvard University, Cambridge, MA.
- . 1983. From maritime chiefdom to agricultural state in Formative coastal Peru, pp. 289–310. *In* Leventhal, R. and A. Kolata, eds., *Civilizations in the Ancient Americas*. University of New Mexico Press, Albuquerque, NM.
- . 1987. Architectural evidence for the development of nonegalitarian social systems in coastal Peru, pp. 9–14. *In* Haas, J., S. Pozorski and T. Pozorski, eds., *The Origins and Development of the Andean State*. Cambridge University Press, Cambridge, UK.
- . 1992. Preceramic architectural and subsistence traditions. *Andean Past* **3**: 67–86.
- FRIED, M. 1967. *The Evolution of Political Society: An Essay in Political Anthropology*. Random House, New York.
- FUNG, R. P. 1988. The Late Preceramic and Initial Period, pp. 67–96. *In* Keatinge, R., P. ed., *Peruvian Prehistory*. Cambridge University Press, Cambridge, UK.
- . 2004. Reseña del salvamento arqueológico en Bandurria: Período Precerámico Tardío, pp. 325–336. *In* Quehaceres de la Arqueología Peruana—Rosa Fung: Compilación de escritos. Edición del Museo de Arqueología y Antropología, Lima, Peru.
- GREIDER, T., ET AL. 1988. *La Galgada: A Preceramic Culture in Transition*. University of Texas Press, Austin, TX.
- HAAS, J. 1982. *The Evolution of the Prehistoric State*. Columbia University Press, New York.
- . 2001. Warfare and the evolution of culture, pp. 329–350. *In* Feinman, G. and T. Price, eds., *Archaeology at the Millennium*. Kluwer Academic/Plenum Publishers, New York.
- HAAS, J., AND W. CREAMER. 2004. Cultural transformations in the Central Andean Late Archaic, pp. 35–50. *In* Silverman, H., P. ed., *Andean Archaeology*. Blackwell Publishing, Oxford, UK.
- . 2006. Crucible of Andean Civilization, the Peruvian Coast from 3000 to 1800 BC. *Current Anthropology* **47**: 745–775.
- HAAS, J., W. CREAMER, AND A. RUIZ. 2003. Gourd Lord. *Archaeology* **56**(3): 19.
- . 2004. Dating the Late Archaic occupation of the Norte Chico region in Peru. *Nature* **432**: 1020–1023.
- . 2005. Power and the emergence of complex societies in the Peruvian Preceramic, pp. 37–52. *In* Vaughn, K., D. Ogburn and C. Conlee, eds., *Foundations of Power in the Ancient Andes*. Archaeological Papers of the American Anthropological Association, No. 14.
- HAAS, J., S. POZORSKI AND T. POZORSKI, EDS. 1987. *The Origins and Development of the State in the Andes*. Cambridge University Press, Cambridge, UK.
- HAAS, L. 2004. Using textiles to date sites in the Norte Chico. Manuscript in possession of the author.
- . 2005. Using textiles to date sites in the Norte Chico. Poster Presentation at the 70th annual meeting of the Society for American Archaeology, Salt Lake City, UT.
- HUAMAN, L., W. CREAMER, AND J. HAAS. 2005. Pollen from Preceramic sites in the Norte Chico Peru. Paper presented at the annual meeting of the Society for American Archaeology, Salt Lake City, UT.
- KEELEY, L. H. 1996. *War before Civilization*. Oxford University Press, New York.
- KEMBEL, S. R. 2001. Architectural Sequence and Chronology at Chavín de Huantar, Perú. Ph.D. Dissertation, Department of Anthropological Sciences, Stanford University, Palo Alto, CA.
- KEMBEL, S. R., AND J. W. RICK. 2004. Building authority at Chavín de Huantar: Models of social organization and development in the Initial Period and Early Horizon, pp. 51–76. *In* Silverman, H., P. ed., *Andean Archaeology*. Blackwell Publishing, Oxford, UK.
- KOSOK, P. 1965. *Land, Life and Water in Ancient Peru*. Long Island University Press, New York.
- KROEBER, A. L. 1925. *The Uhle Pottery Collections from Supe*. University of California Publications in American Archaeology and Ethnology **21**(6).
- LUMBRERAS, L. 1970. *Los templos de Chavín*. Corporación Peruana de Santa, Lima, Peru.



- . 1971. Towards a re-evaluation of Chavín, pp. 1–28. In Benson, E., P. ed., *Dumbarton Oaks Conference on Chavín*. Dumbarton Oaks Research Library and Collection, Washington, DC.
- . 1972. De los orígenes del estado en el Perú: Nueva crónica sobre el viejo Perú. Milla Batres, Lima, Peru.
- . 1981. Los orígenes de la civilización en el Perú. Lima, 5th edition. Milla Batres, Lima, Peru.
- . 1989. Chavín de Huántar en el nacimiento de la civilización andina. INDEA, Lima, Peru.
- MOSELEY, M. 1975. *Maritime Foundations of Andean Civilization*. Cummings, Menlo Park, CA.
- . 1985. The exploration and explanation of early monumental architecture in the Andes, pp. 29–58. In Donnan, C., P. ed., *Early Ceremonial Architecture in the Andes*. Dumbarton Oaks Research Library and Collection, Washington, DC.
- . 1992. Maritime foundations and multilineal evolution: Retrospect and prospect. *Andean Past* 3: 5–42.
- . 2001. *The Incas and Their Ancestors: The Archaeology of Peru*, 2nd edition. Thames and Hudson, New York.
- . In press. The maritime foundation of Andean civilization: An evolving hypothesis. In Trillo, P., P. ed., *Perú y el mar: 12000 años de la historia de la pesquería*. Sociedad Nacional de Pesquería, Lima, Peru.
- MOSELEY, M., AND G. WILLEY. 1973. Aspero, Peru: A reexamination of the site and its implications. *American Antiquity* 38: 452–468.
- NELSON, K., AND M. PERALES MUNGUÍA. 2006. Socio-Economic System of the Northern Chancay: Late Intermediate Period Settlement Patterns in the Huaura Valley, Peru. Paper presented at the 71st annual meeting of the Society for American Archaeology, San Juan, Puerto Rico.
- NELSON, K., AND A. RUIZ. 2005. Archaeological Survey of the Huaura Valley: New Methods and Exciting Finds. Paper presented at the 70th annual meeting of the Society for American Archaeology, Salt Lake City, UT.
- OSBORN, A. 1977. Strandloopers, mermaids and other fairy tales: Ecological determinants of marine resource utilization—the Peruvian case, pp. 157–205. In Binford, L., P. ed., *For Theory Building in Archaeology*. Academic Press, San Diego, CA.
- PERALES MUNGUÍA, M. 2006. Proyecto de Investigación: Reconocimiento Arqueológico en el Valle Bajo de Pativilca, Lima—Perú, Informe Final Report submitted to the Instituto Nacional de Cultura, Lima, Peru.
- PERALES, MUNGUÍA, AND J. HAAS. 2005. Toward and Understanding of Late Archaic Architectural Complexes in the Norte Chico Region of Peru: Excavations at Caballete, Fortaleza Valley. Paper presented at the 70th Annual Meeting of the Society for American Archaeology, Salt Lake City, UT.
- POZORSKI, S., AND T. POZORSKI. 1987. *Early Settlement and Subsistence in the Casma Valley, Peru*. University of Iowa Press, Iowa City, IA.
- . 1990. Reexamining the critical Preceramic/Ceramic Period transition: New data from coastal Peru. *American Anthropologist* 92(2): 481–491.
- . 1992. Early civilization in the Casma Valley, Peru. *Antiquity* 66(253): 845–870.
- POZORSKI, T. 1982. Early social stratification and subsistence systems: The Caballo Muerto complex, pp. 225–253. In Moseley, M. E. and K. C. Day, eds., *Chan Chan: Andean Desert City*. School of American Research, University of New Mexico Press, Albuquerque, NM.
- POZORSKI, T., AND S. POZORSKI. 1990. Huaynuná, a Late Cotton Preceramic site on the North coast of Peru. *Journal of Field Archaeology* 17: 17–26.
- . 2000. Una reevaluación del desarrollo de la sociedad compleja durante el Precerámico Tardío en base a los fechados radiocarbónicos y a las investigaciones arqueológicas en el valle de Casma, pp. 171–186. In Kaulicke, P. ed., *El periodo arcaico en el Perú: Hacia una definición de los orígenes*. Boletín de Arqueología PUCP, Vol. 4. Departamento de Humanidades, Especialidad de Arqueología, Pontificia Universidad Católica del Perú, Lima, Peru.
- QUILTER, J. 1985. Architecture and chronology at El Paraíso. *Journal of Field Anthropology* 12: 279–297.
- . 1991. Late Archaic Peru. *Journal of World Prehistory* 5(4): 387–438.
- . 1992. To fish in the afternoon: Beyond subsistence economies in the study of early Andean Civilization. *Andean Past* 3: 111–125.
- QUILTER, J., B. OJEDA, D. PEARSALL, D. SANDWEISS, J. JONES, AND E. WING. 1991. Subsistence economy of El Paraíso, an early Peruvian site. *Science* 251: 277–283.
- QUILTER, J., AND T. STOCKER. 1983. Subsistence economies and the origins of Andean complex societies. *American Anthropologist* 85: 545–562.
- RAYMOND, J. S. 1981. The maritime foundations of Andean civilization: A reconsideration of the evidence. *American Antiquity* 46(4): 806–821.
- RENFREW, C., AND J. CHERRY. 1986. *Peer Polity Interaction and Socio-Political Change*. Cambridge University Press, Cambridge, UK.
- ROSSEN, JACK. 1998. Unifaces in early Andean culture history: The Nanchoc lithic tradition of northern Peru. *Andean Past* 5: 241–299.
- RUIZ, A., G. ASCENSIO, K. CARLSON, N. CRAIG, W. CREAMER, AND J. HAAS. 2005. Mapping on Different Scales and GIS in the Norte Chico: Enhancements to Traditional Archaeological Excavation. Paper presented at the 33rd annual Midwest Conference on Andean and Amazonian Archaeology and Ethnohistory, University of Missouri, Columbia, MO.
- SCHIFFER, M. 1986. Radiocarbon dating and the “Old Wood” problem: The case of the Hohokam chronology. *Journal of Archaeological Science* 13: 13–30.
- SHADY, R. 1993. Del Arcaico al Formativo en los Andes centrales. *Revista Andina* 21: 103–132.



- . 1995. La neolitización en los Andes Centrales y los orígenes del sedentarismo, la domesticación y la distinción social. *Saguntum* 28: 49–55.
- . 1997. La ciudad sagrada de Caral-Supe en los albores de la civilización en el Perú. Universidad Nacional Mayor de San Marcos, Lima, Peru.
- . 1999a. Flautas de Caral: El Conjunto Musical Mas Antiguo de América. *Boletín del Museo de Arqueología y Antropología* 2(10): 4–5.
- . 1999b. El Sustento Económico del Surgimiento de la Civilización en el Perú. *Boletín del Museo de Arqueología y Antropología* 2(11): 2–4.
- . 1999c. Los Orígenes de la Civilización y la Formación del Estado en el Perú: Las Evidencias Arqueológicas de Caral-Supe, Primera Parte. *Boletín del Museo de Arqueología y Antropología* 2(11): 2–4.
- . 2000a. Ritual de enterramiento de un recinto en el Sector Residencial A en Caral-Supe, pp. 187–212. In Kaulicke, K., P. ed., *El Periodo Arcaico en el Perú: Hacia una Definición de los Orígenes*. *Boletín de Arqueología PUCP*, Pontificia Universidad Católica del Perú, Lima, Peru.
- . 2000b. Los Orígenes de la Civilización y la Formación del Estado en el Perú: Las Evidencias Arqueológicas de Caral-Supe, Segunda Parte. *Boletín del Museo de Arqueología y Antropología* 3(2): 2–7.
- . 2000c. Práctica Mortuoria de la Sociedad de Caral-Supe Durante el Arcaico Tardío. *Boletín del Museo de Arqueología y Antropología* 3(3): 2–15.
- . 2003a. Los orígenes de la civilización y la formación del estado en el Perú: Las evidencias arqueológicas de Caral-Supe, pp. 93–100. In Shady, R. and C. Leyva, eds., *La ciudad sagrada del Caral-Supe: Los orígenes de la civilización andina y la formación del estado prístino en el antiguo Perú*. Instituto Nacional de Cultura, Lima, Peru, Originally published in *Boletín del Museo de Arqueología y Antropología* 2(12): 2–4, 1999, and 3(2): 2–7, 2000.
- . 2003b. El sustento económico del surgimiento de la civilización en el Perú, pp. 101–106. In Shady, R. and C. Leyva, eds., *La ciudad sagrada del Caral-Supe: Los orígenes de la civilización andina y la formación del estado prístino en el antiguo Perú*. Instituto Nacional de Cultura, Lima, Peru, Originally published in *Boletín del Museo de Arqueología y Antropología* 2(11): 2–4, 1999.
- . 2003c. Sustento socioeconómico del estado prístino de Supe-Perú: Las evidencias de Caral-Supe, pp. 107–122. In Shady, R. and C. Leyva, eds., *La ciudad sagrada del Caral-Supe: Los orígenes de la civilización andina y la formación del estado prístino en el antiguo Perú*. Instituto Nacional de Cultura, Lima, Peru, Originally published in *Arqueología y Sociedad* 13: 49–66, 2000.
- . 2003d. Caral-Supe: La civilización más antigua del Perú y América, pp. 335–240. In Shady, R. and C. Leyva, eds., *La ciudad sagrada del Caral-Supe: Los orígenes de la civilización andina y la formación del estado prístino en el antiguo Perú*. Instituto Nacional de Cultura, Lima, Peru. Originally published in *Multiple: Cultura Peruana* 3: 60–68, 2002.
- . 2003e. Caral-Supe y la costa norcentral del Perú: La cuna de la civilización y la formación del estado prístino, pp. 139–146. In Shady, R. and C. Leyva, eds., *La ciudad sagrada del Caral-Supe: Los orígenes de la civilización andina y a formación del estado prístino en el antiguo Perú*. Instituto Nacional de Cultura, Lima, Peru. Originally published in Lohmann, G., R. Burger, Y. Onuki, and R. Shady, eds., 2000, *Historia de la cultural peruana I*, pp. 45–87. Fondo Editorial del Congreso del Perú, Lima, Peru.
- . 2004. Caral. Centura SAB, Lima.
- SHADY, R., C. DOLORIER, F. MONTESINOS, AND L. CASAS. 2003. Los orígenes de la civilización en el Perú: El área norcentral y el Valley de Supe durante el Arcaico Tardío, pp. 51–92. In Shady, R. and C. Leyva, eds., *La ciudad sagrada del Caral-Supe: Los orígenes de la civilización andina y la formación del estado prístino en el antiguo Perú*. Instituto Nacional de Cultura, Lima, Peru, Originally published in *Arqueología y Sociedad* 13: 13–48, 2000.
- SHADY, R., J. HAAS, AND W. CREAMER. 2001. Dating Caral, a Preceramic urban center in the Supe Valley on the central coast of Peru. *Science* 292: 723–726.
- SHADY, R. and C. LEVYA, EDS. 2003. *La ciudad sagrada de Caral-Supe: Los orígenes de la Civilización Andina y la formación del estado prístino en el antiguo Perú*. Instituto Nacional de Cultura, Lima, Peru.
- SHADY, R., AND A. RUIZ. 1979. Evidence for Interregional Relationships during the Middle Horizon on the north-central coast of Peru. *American Antiquity* 44(4): 676–684.
- SILVA SIFUENTES, J. 1975. Excavaciones en Bermejo, Ancash, 1972. Bachelor's Thesis, Departamento de Ciencias Histórico Sociales, Programas Académicos de Ciencia Social, Universidad Nacional Mayor de San Marcos, Lima, Peru.
- . 1978. Acercamiento al estudio histórico de Bermejo, Anchas, pp. 310–324. In Matos, R., P. ed., *Actas y trabajos, II Congreso Peruano el hombre y la cultura andina*, Vol. II. Editorial Lasontay, Lima, Peru.
- STANISH, C. 2001. The origin of state societies in South America. *Annual Review of Anthropology* 30: 40–64.
- UHLE, M. 1925. Report on Explorations at Supe, pp. 257–264. Appendix to *The Uhle Pottery Collections from Supe*, by Kroeber, A. L. University of California Publications in American Archaeology and Ethnology 21 (6).
- VEGA-CENTENO, R. 2005. Ritual Architecture in a Context of Emergent Complexity: A Perspective from Cerro Lampay, A Late Archaic Site in the Central Andes. Ph.D. Dissertation, University of Arizona, Tucson, AZ.
- VEGA-CENTENO, R., L. F. VILLACORTA, L. E. CÁCERES, AND G. MARCONE. 1998. Arquitectura monumental temprana en el valle medio de Fortaleza. *Boletín Arqueológico* 2: 219–238.



- WILLEY, G., AND J. CORBETT. 1954. Early Ancon and Early Supe Culture: Chavín Horizon Sites of the Central Peruvian Coast. *Columbia Studies in Archaeology and Ethnology*, Vol 3. Columbia University Press, New York.
- WILLIAMS, C. 1972. La difusión de los pozos ceremoniales en la costa Peruana. *Apuntes* 2: 1-9.
- . 1978-1980. Complejos de pirámides con planta en U: Patrón arquitectónico de la Costa Central. *Revista del Museo Nacional* 44: 95-110.
- . 1985. A scheme for the early monumental architecture of the central coast of Peru, pp. 227-240. *In* Donnan, C., P. ed., *Early Ceremonial Architecture in the Andes*. *Dumbarton Oaks Research Library and Collection*, Washington, DC.
- WILLIAMS, C., AND M. MERINO. 1979. Inventario, catastro y delimitación del patrimonio arqueológico del Valley de Supe. Report submitted to the Instituto Nacional de Cultura, Lima, Peru.
- WILSON, D. 1981. Of maize and men: A critique of the maritime hypothesis of state origins on the coast of Peru. *American Anthropologist* 83: 93-120.
- . 1988. *Prehispanic Settlement Patterns in the Lower Santa Valley, Peru: A Regional Perspective on the Origins and Development of Complex North Coast Society*. Smithsonian Institution Press, Washington, DC.
- ZECHENTER, E. 1988. *Subsistence Strategies in the Supe Valley of the Peruvian Central Coast during the Complex Preceramic and Initial Periods*. Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles, CA.



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